Ecosystem Enhancement Program

cleanwater Management Trust Fund

North Carolina General Assembly

Study of the Merger of Ecosystem Enhancement Program & Clean Water Management Trust Fund

Final Report of Findings and Recommendations

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In conjunction with

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Executive Summary

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Section 16 of Part XVI of Session Law 2206-248, House Bill 1723 directed the Environmental Review Commission and the Joint Legislative Transportation Oversight Committee to jointly study the merger of the organizational functions of the Ecosystem Enhancement Program (EEP) and the Clean Water Management Trust Fund (CWMTF). The North Carolina General Assembly engaged Dye Management Group, Inc. to conduct this study. This report documents the result of this study.

Based on the study, the merger of the EEP and the CWMTF is not recommended. However, there are opportunities for a number of programmatic synergies between the EEP and the CWMTF, which should be initiated. In addition, the study also identified a number of policy changes and process improvements to improve the overall efficiency and effectiveness of EEP operations and the interrelationship between EEP and the North Carolina Department of Transportation (NCDOT).

A. Study Overview

In 1989, the North Carolina General Assembly passed the Highway Trust Fund Act, initiating a significant transportation construction program. The increase in impacts to aquatic resources resulting from the highway construction program also resulted in a substantial increase in compensatory mitigation requirements for the North Carolina Department of Transportation (NCDOT) under §401 and §404 of the Clean Water Act.

During the 1990s, NCDOT typically addressed the mitigation required to obtain permits from the United States Army Corps of Engineers (USACE) and the North Carolina Division of Water Quality (DWQ) at the time of the permit application. Permit applications were made within the year prior to the proposed date for letting the transportation project (selection of a construction contractor) and initiating the construction phase of a project. As part of the permit application process, NCDOT discussed mitigation requirements, the acceptable location for this mitigation, and the details concerning the construction of this mitigation with regulators. NCDOT developed detailed mitigation plans for each project and USACE and DWQ staff reviewed these plans thoroughly prior to issuing the appropriate permits. This process was relatively ineffective, and an estimated 40% of projects requiring mitigation were delayed for several months or several years because of permit issues related to mitigation. These delays increased the cost of constructing the projects and created a loss of confidence in NCDOT by its numerous stakeholders.

Because of these problems with mitigation, the North Carolina Board of Transportation and NCDOT initially established its own internal advanced mitigation program, with the goal of having mitigation in place at the time a project was actually let to construction. Then in 2001, an interagency team recommended that the responsibility for providing mitigation be

transferred to a new agency within the Department of Environment and Natural Resources (NCDENR). This agency, to be known as the Ecosystem Enhancement Program, would provide advanced mitigation to meet the needs of NCDOT as well as take over responsibility for the in-lieu-fee program, which was then housed in the Wetlands Restoration Program (WRP).

The cornerstone of the EEP is a detailed watershed-planning process that is designed to identify high-quality, cost-effective mitigation projects that will also contribute to watershed improvement and protection and open space preservation. The EEP provides a programmatic approach to providing in-ground, functioning compensatory mitigation for the majority of permitted impacts in advance of the loss of aquatic resources.

The EEP develops mitigation sites and/or acquires mitigation credits from mitigation banks to meet NCDOT mitigation requirements based on demand forecasts provided by NCDOT. The Memorandum of Agreement (MOA) between NCDOT, NCDENR and USACE, which established the EEP, specifies that this mitigation will be implemented within the same eight-digit United States Geologic Survey (USGS) cataloguing unit in which the impact occurred. EEP uses a number of techniques to identify appropriate mitigation sites including its watershed planning process, which it conducts at various levels of detail in the different river basins across the state based on the anticipated level of needs in the cataloguing units within the river basin. .

To help jumpstart the EEP and immediately remove mitigation from the critical path for obtaining a permit and initiating construction of transportation projects, EEP was initially given additional flexibility in the way that mitigation was provided. This included allowing the EEP to utilize high-quality preservation lands in higher ratios than is normally allowed to meet 100% of permit requirements, with the understanding that the required wetland and stream restoration would be developed by the end of the transition period. The goal was that, at the end of a seven-year ramp-up period, the EEP would begin to have the actual restoration projects in the ground, with successful monitoring complete, in advance of the letting of the construction project at which point half of the high quality preservation lands would then be released for future use within the designated ecoregion.

While the EEP is focused on providing mitigation, North Carolina's Clean Water Management Trust Fund (CWMTF) has a broader mission of preserving and enhancing water quality within the state of North Carolina. Established by the General Assembly in 1996, CWMTF helps local governments, state agencies, and conservation non-profit groups finance projects to protect and restore surface water quality. Since 1996, as result of on-going appropriations from the General Assembly, CWMTF has awarded 943 grants for a total of $711.5 million. CWMTF provides grants to:

- Enhance or restore degraded waters.
- Protect unpolluted waters.
- Contribute toward a network of riparian buffer and greenways for environmental, educational, and recreational benefits.

CWMTF projects include improvements to wastewater treatment and collection systems; storm water management; wetlands, riparian buffer, and stream restoration; and the acquisition of buffers, floodplains, wetlands, and greenways. CWMTF's enabling legislation specifically restricts it from providing compensatory mitigation.

Beginning in 2004 and continuing into 2005 and 2006, as the EEP program ramped up and acquisition and restoration activities were initiated, a number of questions were raised about the actual cost of the EEP and whether the cost of its operation will provide the anticipated payback in terms of helping to expedite the letting of transportation projects. In addition, there were other operational questions raised as well, including whether the MOA stipulation to require mitigation within a specific cataloguing unit was creating operational complexities for the EEP and thus significantly increasing the cost of mitigation for NCDOT.

At the same time, there were also questions raised by a number of policy makers about whether there may be potential synergies between the EEP and the CWMTF that the state was not taking full advantage of, given some of the overlap in the missions of these two agencies. Some policy makers, for example, questioned whether the prohibition on the CWMTF participating in compensatory mitigation should be re-assessed. Removing the restriction on the CWMTF participating in compensatory mitigation could allow some of the riparian buffer, wetland and stream restoration projects funded by the state through the CWMTF to then be applied as mitigation credits for transportation projects. Likewise, some policymakers believed that there could be opportunities to work with regulators in certain cases to utilize non-traditional mitigation approaches for projects such as repairing a failing wastewater treatment plant downstream in an area being impacted by a transportation project.

In response to these issues and others, this study was initiated. The scope of the study included conducting a detailed review of the current organizational structure and key work processes of both the EEP and the CWMTF programs, comparing the EEP processes with the previous NCDOT mitigation program and assessing the potential role of mitigation banks in North Carolina. In addition, the study team was asked to review practices in other peer states and assess their applicability to North Carolina, assess the impact of proposed federal rule making on the EEP, and develop an inventory of acquisitions and credits to assess whether there is a surplus of mitigation credits in some areas of the state. The team also conducted a detailed alternatives analysis of five (5) potential models for both better integrating the EEP and the CWMTF and providing mitigation in North Carolina. These alternatives included:

- The status quo in which the EEP and the CWMTF are independent programs.
- The status quo with modifications designed to improve the efficiency of the current program environment and promote enhanced programmatic synergies between the EEP and the CWMTF.
- A merger of the EEP and the CWMTF programs.
- Returning responsibility for mitigation for transportation projects to NCDOT.

- Implementing a private mitigation banking model to the extent practical.

As part of this study effort, the team conducted a significant stakeholder outreach effort, including conducting more than 40 detailed interviews and executing follow-up work sessions with various stakeholders to review findings and potential recommendations.

B. Summary of Key Findings

Highlights of some of the key findings from this study include the following:

- The NCDOT mitigation program was not effective in meeting its program objectives, with more than 40% of permits requiring mitigation delayed for various lengths of time.
- No permit has been delayed for mitigation since the initiation of the EEP, resulting in cost avoidance to NCDOT of at least $6.5 million in potential construction cost increases due to delayed lettings.
- Based on NCDOT's demand forecast, there will be a surplus of mitigation in a number of cataloguing units. This surplus is the result of a number of factors, which include volatility in the transportation improvement program (TIP), inexperience in forecasting mitigation requirements on the part of NCDOT, the lack of any flexibility to apply credits outside the cataloguing unit being impacted, and an overly aggressive program on the part of both NCDOT and the EEP to acquire high-quality preservation lands.
- Based on NCDOT's demand forecast, there will be a surplus of mitigation in a number of cataloguing units. This surplus is the result of a number of factors, which include volatility in the transportation improvement program (TIP); inexperience in forecasting mitigation requirements on the part of NCDOT; decreases in actual mitigation requirements after mitigation was acquired based on the initial higher forecast;.the lack of any flexibility to apply credits outside the cataloguing unit being impacted, and an overly aggressive program on the part of NCDOT and EEP to acquire high-quality preservation lands.
- The genesis of this surplus issue pre-dates the EEP. It started with the NCDOT's advance mitigation program and the department's efforts to acquire high-quality preservation lands.
- Between the EEP and NCDOT, more than $78 million has been spent to acquire high-quality preservation lands. However, some of this land is uplands, and, based on discussions with various stakeholders, portions of these properties may be logical candidates for sale.
- The EEP is recognized nationally as a model program; however, there are no states actively trying to replicate the EEP program for a variety of reasons. These reasons include the number and the degree of maturity of mitigation banks in many states, the organizational change and management effort required to implement an EEP-like

program, the cost of implementing the program, and uncertainty concerning the impact of the proposed federal mitigation rules on an EEP-like program.

- The proposed federal mitigation banking rules, as initially written in draft form, would eliminate in-lieu fee programs. This would likely cause substantial restructuring of the EEP and how it provides mitigation for permittees, including the NCDOT. In many cases, responsibility for mitigation would be transferred back to NCDOT. If this were to occur, NCDOT would need to utilize mitigation banks and/or implement project specific mitigation. However, the EEP is well respected by regulators at the federal level and a number of comments on the proposed rule voiced support for EEP-like programs =. Thus, it is our sense that there is a reasonable likelihood that the final rule will allow programs similar to the EEP to continue.
- Several of the peer states surveyed as part of the study make more extensive use of mitigation banks to meet their mitigation requirements for transportation projects; however, mitigation banks have traditionally not been very strong in North Carolina. Some of the reasons for this are the very narrow definition of service area (cataloguing unit) and the fact that banks would not be economically viable due to limited demands for services in some areas of the state.
- There are a number of ways in which the EEP and the CWMTF already work together today. However, we believe there are a number of potential additional programmatic synergies between the two organizations, including working together to address the surplus issue, partnering on functional mitigation and out-of-the-box mitigation projects, and more tightly integrating the EEP's watershed planning process with the CWMTF's application and selection process.

C. Summary of Major Recommendations

Some of the major recommendations from the study include the following:

- Our analysis suggests that there are limited benefits to merging the EEP and the CWMTF. While both agencies are focused on creating positive environmental outcomes, the EEP is responsible for delivering a compensatory mitigation program based in a fairly structured, regulatory environment. The CWMTF, on the other hand, is responsible for managing a voluntary program with a substantially larger scope. Likewise, while the EEP is a delivery organization that manages the restoration of streams and wetlands, the CWMTF is a grantor agency that provides funding to other organizations that actually design and implement projects. In addition, there would be significant risk in terms of stakeholder buy-in and cultural change between the two organizations.
- While we do not recommend an actual merger of the two organizations, we believe that there are a number of programmatic synergies between the EEP and the CWMTF that should be aggressively pursued. These programmatic synergies include:
  - Ensuring that the EEP is engaged in all state land acquisitions in order to utilize mitigation dollars as the first source of funding for any acquisitions by the state

in an area where there is a need for mitigation credits and the property being acquired would be eligible for mitigation credits.

- Linking the two organizations more closely through tighter integration of the EEP's watershed planning process with the CWMTF's grant application and selection process.
- Developing a partnership between the EEP and the CWMTF to provide a mechanism to help other state agencies, local governments, or land trusts acquire the mitigation lands that may be declared as surplus.
- Developing a partnership between the EEP and the CWMTF to jointly pursue functional replacement projects and a pilot of an out-of-the-box mitigation project.

- In addition, the General Assembly should consider removing the prohibition on the CWMTF participating in compensatory mitigation. Having the option to utilize CWMTF monies for compensatory mitigation would provide the state additional flexibility and provide the potential for better leveraging the state's scare financial resources. It also may allow the CWMTF and the EEP to work together more effectively in the future on functional mitigation and out-of-the-box mitigation initiatives.
- NCDOT and NCDENR, as the state's two agency partners in the MOA, should work with USACE to negotiate changes to the MOA to provide for the flexibility to utilize applicable, surplus credits between cataloguing units a within the same river basin.
- NCDOT and NCDENR should also renegotiate the MOA to include a clear statement of direction that mitigation ratios may be reduced in situations where mitigation is in the ground and functional at the time of impact. This will substantially reduce the amount of mitigation needed over the long term and result in significant savings for the state.
- NCDOT and the EEP should complete identification of surplus properties and develop an action plan for each property including sale of the property if that is most appropriate.
- NCDOT should improve the quality of the demand forecast for mitigation by implementing a two-phased Transportation Improvement Program (TIP). This two-phased TIP would include a development TIP that contains projects from the feasibility study, environmental planning and preliminary design stages of the project delivery life cycle, and a delivery TIP consisting of projects that are in final design, letting preparation, and the construction phases of the project delivery life cycle. A comprehensive review and sign-off process would be required to program a project into the delivery TIP.
- NCDOT and the EEP should shift from the current advanced mitigation approach to more of a just-in-time mitigation approach, wherein mitigation is ordered and work initiated well in advance of starting construction but only at a point where there is a firm commitment by NCDOT that the transportation project will actually be done. This will allow the actual requirements for mitigation to be more clearly understood

because most of the collaborative decision-making in the department's Merger 01 process will have been completed.

- NCDOT should shift from compensating the EEP on an expense reimbursement methodology to a per-credit fee basis when the department begins ordering mitigation at the time a project is programmed for construction. We believe that this recommendation should be implemented as the current build-out of mitigation is completed and the just-in-time mitigation approach based on the two-phased TIP is initiated.
- The EEP should strengthen and further integrate its watershed planning process with other functional areas by:
  - Improving integration of the EEP's watershed planning with DWQ's basin-wide planning process.
  - Strengthening the end products resulting from the watershed planning process to define specific priority projects.
  - Linking the CWMTF grant application process more closely to watershed plans.
- The EEP and the CWMTF should partner on pilot projects for functional mitigation and out-of-the-box mitigation.
- The EEP should initiate a three-year mitigation banking pilot in multiple watersheds.

In preparing a proposed timeline for implementing these recommendations, the study team attempted to clearly delineate between short- and longer-term recommendations. Short-term recommendations include renegotiating elements of the MOA to obtain additional flexibility and better manage the surplus of mitigation. These recommendations must be addressed immediately, as time is of the essence. Then, there are a number of other recommendations that can be implemented over the next two years, while some recommendations have a logical transition point three to four years in the future, as the current EEP mitigation build-out begins to level off.

Integral to the implementation of a number of the shorter-term recommendations, such as renegotiating the MOA to obtain additional flexibility, will be the involvement of the senior executives of NCDENR and NCDOT. We believe that not only support but active hands-on involvement at the secretary level will be required to execute on a number of these recommendations.

I. Study Introduction

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Section 16 of Part XVI of Session Law 2206-248, House Bill 1723 directed the Environmental Review Commission and the Joint Legislative Transportation Oversight Committee to jointly study the merger of the organizational functions of the Ecosystem Enhancement Program (EEP) and the Clean Water Management Trust Fund (CWMTF). The North Carolina General Assembly selected Dye Management Group, Inc., along with our teaming partners, the Environmental Law Institute and SEPI Engineering, to conduct this study. This report documents the key findings and recommendations of this study.

This chapter provides background on the study scope and objectives. It also outlines our project approach and research methodology. The remaining sections of this report define the programmatic environment and regulatory framework in North Carolina, describe mitigation practices and strategies in other states, and compare these practices to North Carolina's. The report also provides an overview of current federal regulations and the potential impact of anticipated regulatory changes at the federal level, presents an analysis of various organizational and programmatic alternatives for both integrating EEP and CWMTF and providing mitigation, describes our findings and recommendations, and provides a proposed transition plan for implementing the various recommendations.

A. Study Background

The Federal Water Pollution Control Act (or The Clean Water Act), enacted in 1972, provides the basis in §401 and §404 for federal and state requirements that all permittees, including state departments of transportation and other government agencies, as well as private individuals and organizations, to mitigate impacts to streams and wetlands that are "waters of the United States." In addition, the state of North Carolina adopted rules in 2001 regulating impacts to so-called "isolated waters" that fall outside the jurisdiction of the federal Clean Water Act. With a goal of maintaining nutrient reduction functions, North Carolina has also adopted Nutrient Offset Program in the Neuse and Tar-Pamlico river basins and rules protecting riparian buffers within the Neuse, Catawba, and Tar-Pamlico river basins.

Primary responsibility for the administering the federal program rests with the United States Army Corp of Engineers (USACE), based in part on policies and guidelines established by the United States Environmental Protection Agency (EPA). The primary responsibility for administering the state program in North Carolina rests with the Division of Water Quality (DWQ) of the North Carolina Department of Environment and Natural Resources (NCDENR).

The goal of the 404 program is no net loss. To achieve this policy of no net loss, regulators require permittees to go through a three-step mitigation sequence, of which the third step is

compensation for acres lost to the permitted impact. Federal policy recommends that permittees provide a minimum of 1 to 1 acreage replacement for compensatory mitigation. For example, if one acre of wetlands were being impacted by a proposed transportation or other development project, the permit applicant would be required to restore one acre of the same type of wetland. In many instances, permittees may be required to mitigate at a higher ratio in order to provide some insurance against failure of mitigation, or to compensate for a temporal loss of function.

Federal policies dictate a preference that mitigation is typically provided in the watershed as the permitted impact, typically within the same hydrologic cataloguing unit (HUC). Hydrologic cataloguing units are defined by the United States Geological Survey (USGS), which has divided and sub-divided the nation into successively smaller hydrologic units that are classified into four levels: regions, sub-regions, accounting units, and cataloguing units. The eight-digit cataloguing unit is a geographic area representing part or all of a surface drainage basin, a combination of drainage basins, or a distinct hydrologic feature. There are 2,264 cataloguing units in the United States. North Carolina has 54 HUCs or cataloguing units within its 17 river basins.

In 1989, the North Carolina General Assembly passed the Highway Trust Fund Act, initiating a significant transportation construction program, including seven outer loops and four-lane divided highways for towns with populations greater than 50,000. The increase in highway construction conducted under the program also resulted in a substantial increase in the amount of compensatory mitigation required for the North Carolina Department of Transportation (NCDOT), especially given that North Carolina is 17% wetlands.

During the 1990s, NCDOT typically addressed the mitigation required to obtain permits from the USACE and DWQ at the time of the permit application. Permit applications were made within the year prior to the proposed date for letting the transportation project (selection of a construction contractor) and initiating the construction phase of a project.

As part of the permit application process, NCDOT discussed mitigation requirements, the acceptable location for this mitigation, and the details concerning the construction of this mitigation with regulators. NCDOT developed detailed mitigation plans for each project, and USACE and DWQ staff reviewed these plans in detail prior to issuing the appropriate permits.

NCDOT typically provided mitigation on-site or as near the site as possible. NCDOT usually took responsibility for providing the mitigation, either by designing the mitigation in-house or with consultant engineers and then contracting for construction of the mitigation. On occasion, NCDOT purchased mitigation credits from mitigation bankers. DOT also developed mitigation banks by contracting with private firms to sponsor the bank, to develop qualifying mitigation in advance of the need, based on their assumptions about the market for mitigation requirements, and then make these “credits” available for purchase by impactors to use to satisfy the mitigation requirements of regulators.

Because the discussion of mitigation requirements was occurring between NCDOT and the regulatory staff of the USACE and DWQ for the first time when the permit application was

submitted, the process of reviewing the detailed mitigation plans and obtaining approval for the proposed mitigation became a critical path activity to initiate construction of transportation projects. As a result, a large number of projects were delayed due to permits not being obtained in time because of the inability to reach consensus on mitigation requirements between NCDOT, USACE, Division of Coastal Management (DCM) and DWQ and obtain regulatory approval of NCDOT's proposed mitigation plans for a project. NCDOT has estimated that up to 40% of projects requiring mitigation were delayed, with these delays ranging from several months to a number of years.

In response to these delays, NCDOT and its Board of Transportation began an effort in the mid 1990s to identify mitigation needs for projects earlier and begin to secure advance mitigation. Advance mitigation refers to having acceptable mitigation in place and functioning prior to the request to use this mitigation to meet the requirements of a specific permit application.

NCDOT identified its anticipated mitigation requirements based on analysis of upcoming projects in its Transportation Improvement Program (TIP). It began trying to secure the anticipated mitigation through a number of approaches, including selecting sites and beginning to construct mitigation while a transportation project was still in the preconstruction phase, purchasing a number of high-quality preservation lands to provide part of the required mitigation for future projects, and purchasing available credits from mitigation bankers.

However, significant volatility within the TIP has limited the success of the NCDOT advanced mitigation program. The priority and sequencing of projects within the TIP would change frequently for any number of reasons. Some of these reasons included various delays in the NCDOT project development process; changes in the relative priority of different projects by NCDOT board members, legislators and local officials; other issues raised by regulators besides mitigation as part of the permitting process; and continuous shifting between various potential funding sources proposed for use on a project.

The result of these changes in the TIP would be imbalances in the inventory of advanced mitigation. Mitigation would be developed in one HUC for a project, which was delayed or deferred creating at least a short-term surplus of mitigation in that cataloguing unit. At the same time, mitigation would not be available in another cataloguing unit for a project whose priority had been moved up and for which planning for advance mitigation had not been initiated. Quite often, this would again lead to a delay in the letting of this project. Both of these outcomes represented significant cost impacts to NCDOT: in the first case, the cost of developing potentially unneeded mitigation, and in the second case, the costs associated with delays in the start of construction for a project for which the required mitigation was not available.

In addition, there were also a number of questions around organization mission and focus concerning NCDOT's mitigation program. Environmental specialists on staff at NCDOT coordinated NCDOT's mitigation program; however, the core mission of NCDOT is transportation focused: the safe and efficient movement of people and goods. This mission is principally achieved through planning, designing, building, and operating the state's

transportation infrastructure. The acquisition of high-quality preservation lands and the planning, design, and construction of stream and wetlands restoration projects was at best an adjunct to this core mission, necessitated by the requirement to provide mitigation to obtain permits for the department's transportation projects.

In response to the challenges NCDOT was having in providing mitigation, NCDOT, NCDENR, and the USACE worked together to establish the Ecosystem Enhancement Program (EEP). NCDOT, NCDENR, and the USACE signed a Memorandum of Agreement (MOA) providing the framework for this program in July of 2003.

A primary responsibility of EEP, which is housed within NCDENR, is to administer an in-lieu fee program to provide required mitigation for NCDOT projects in advance of the start of construction projects and the loss of the aquatic resource to be impacted by these projects.

An in-lieu fee program is an agreement between a regulatory agency (state, federal, or local) and a single sponsor, generally a public agency or non-profit organization. According to the USACE, "in-lieu fee mitigation occurs in circumstances where a permittee provides funds to an in-lieu fee sponsor instead of either completing project-specific mitigation or purchasing credits from a wetland mitigation bank approved under the Banking Guidance."[1]

Under an in-lieu fee agreement, the mitigation sponsor collects funds from one organization or a number of organizations who are required to conduct compensatory mitigation required under §404 or another state or local wetland regulatory program. The sponsor may use the funds pooled from multiple permittees to create one or a number of sites under the authority of the agreement to satisfy the permittees' required mitigation. In-lieu fee mitigation is typically categorized as mitigation conducted after permitted impacts have occurred; however, the goal of the EEP program for NCDOT is specifically to provide mitigation in advance of the anticipated impacts.

The cornerstone of the EEP is a detailed watershed-planning process that is designed to identify high-quality, cost-effective mitigation projects that will also contribute to watershed improvement and protection and open space preservation. The EEP provides a programmatic approach to providing in-ground, functioning compensatory mitigation for the majority of permitted impacts in advance of the loss of aquatic resources.

The EEP develops mitigation sites and/or acquires mitigation credits from mitigation banks to meet NCDOT mitigation requirements, based on demand forecasts provided by NCDOT about anticipated mitigation requirements and the proposed letting dates for these projects in NCDOT's TIP. The MOA specifies that this mitigation will be implemented within the

[1] US Department of the Army, US Environmental Protection Agency, US Department of Interior, and US Department of Commerce. *Federal Guidance on the Use of In-lieu fee Arrangements for Compensatory Mitigation under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act*. 2000.

same HUC that the impact occurred. The appropriate sites for implementing the required mitigation are intended to be identified through river basin and detailed watershed plans that the EEP develops. The EEP develops its mitigation projects through one of three approaches: purchase from a bank, design/bid/build and full delivery. Under the design/bid/build approach, the EEP contracts separately with engineering firms for design and then contracts with a construction firm for the actual restoration project. Under the full delivery approach, the EEP effectively purchases credits in one or more watersheds from a private delivery provider who is responsible for site selection, design, and construction, according to standards and specifications developed by the EEP.

To help jump-start the EEP and immediately remove mitigation from the critical path for obtaining a permit for and initiating construction of transportation projects, the MOA provided the EEP with additional flexibility in the way that mitigation was provided. This included initially allowing the EEP to utilize high-quality preservation lands in higher ratios than is normally allowed EEP to utilize high-quality preservation to meet 100% of permit requirements, with the understanding that the required wetland and stream restoration would be developed by the end of the transition period. The goal was that, at the end of a seven-year ramp-up period, the EEP would begin to have the actual restoration projects in the ground, with successful monitoring complete, in advance of the letting of the construction project at which point ½ of the HQP is released for future use in the ecoregion.

In addition to its responsibilities to provide mitigation for NCDOT, EEP also manages the state's in-lieu fee program for non-NCDOT mitigation needs, which was formerly the Wetlands Restoration Program (WRP) that was established in 1996. The EEP also manages a nutrient offset program that provides dischargers and developers in three river basins with the option to purchase credits instead of conducting their own mitigation to offset discharge of wastewater and other effluents into state waters.

While the EEP is focused on providing mitigation, North Carolina's Clean Water Management Trust Fund (CWMTF) has a broader mission of preserving and enhancing water quality within the state of North Carolina. Established by the General Assembly in 1996, CWMTF helps local governments, state agencies, and conservation non-profit groups to finance projects in order to protect and restore surface water quality. Since 1996, as result of on-going appropriations from the General Assembly, CWMTF has awarded 943 grants for a total of $711.5 million. CWMTF provides grants to:

- Enhance or restore degraded waters.
- Protect unpolluted waters.
- Contribute toward a network of riparian buffer and greenways for environmental, educational, and recreational benefits.

CWMTF projects include improvements to wastewater treatment and collection systems; storm water management; wetlands, riparian buffer and stream restoration; and the acquisition of buffers, floodplains, wetlands, and greenways. CWMTF's enabling legislation specifically restricts it from providing compensatory mitigation.

B. Study Scope and Objectives

Beginning in 2004 and continuing into 2005 and 2006 as the EEP program ramped up and acquisition and restoration activities were initiated, a number of questions were raised about the actual cost of the EEP and whether the cost of its operation will provide the anticipated payback in terms of helping to expedite the letting of transportation projects. In addition, there were other operational questions raised as well, including whether the MOA stipulation to require mitigation within a specific HUC or cataloguing unit was creating operational complexities for the EEP and thus significantly increasing the cost of mitigation for NCDOT.

At the same time, there were also questions raised by a number of policymakers about whether there may be potential synergies between the EEP and the CWMTF that the state was not taking full advantage of, given some of the overlap in the missions of these two agencies. Some policymakers, for example, questioned whether the prohibition on the CWMTF participating in compensatory mitigation should be re-assessed. Removing the restriction on the CWMTF participating in compensatory mitigation could allow some of the riparian buffer, wetland, and stream restoration projects funded by the state through the CWMTF to then be applied as mitigation credits for transportation projects. Likewise, some policymakers believed that there could be opportunities to work with regulators in certain cases to utilize non-traditional mitigation approaches for projects, such as repairing a failing wastewater treatment plant downstream from a proposed transportation project. These types of proposed "out of the box" mitigation approaches could provide additional points of synergy between the EEP as the agency responsible for mitigation and the wider range of water quality initiatives typically funded by the CWMTF.

In addition, there have been recent changes in the leadership and management of the CWMTF, with a new board chairperson taking office and a search underway for a new executive director. Thus, given that this is a transition time at the CWMTF, it was also thought that this might be an appropriate point at which to further explore and execute on potential synergies between the two organizations.

In response to these issues and others, the North Carolina General Assembly enacted Section 16 of Part XVI of Session Law 2006-248, House Bill 1723, which directed the Environmental Review Commission and the Joint Legislative Transportation Oversight Committee to jointly study the merger of the organizational functions of the EEP and the CWMTF. The General Assembly then engaged Dye Management Group, Inc. to conduct this study.

The scope of this study includes the following objectives and tasks:

- Conducting a detail review of the current organizational structure and key work processes of both the EEP and the CWMTF programs.
- Comparing the current EEP processes with mitigation processes utilized by NCDOT prior to the creation of the EEP.

- Reviewing the current state of the mitigation banking industry in North Carolina and assessing the feasibility of using mitigation banks to provide all or some of the mitigation credits required for NCDOT projects.
- Reviewing practices in other peer states in regards to providing mitigation for transportation projects.
- Reviewing proposed or anticipated federal rule-making on compensatory mitigation and assessing the impact of this rule-making on the EEP.
- Assessing based on the information developed during the study the feasibility of merging the EEP and the CWMTF.
- Analyzing multiple organizational models and programmatic approaches for providing mitigation for transportation projects.
- Developing and documenting an inventory of acquisitions and credits, including identifying assets acquired by NCDOT prior to the initiation of the EEP.
- Utilizing this inventory of acquisitions and credits to identify the extent of the surplus of mitigation credits in some areas of the state and developing recommendations on how to address this surplus.
- Recommending appropriate strategies to address the delivery of mitigation in North Carolina and providing an implementation plan with suggested timing and sequencing for any recommendations.

C. Research Questions

In designing our project approach for this study, Dye Management Group, Inc. identified a number of potential research questions that were then used as a general framework for identifying and evaluating the various alternatives for delivering a cost-effective mitigation program for transportation projects in North Carolina. Some of these research questions included:

- Is the EEP program helping to reduce or eliminate the previous delays in obtaining permits for transportation projects in North Carolina?
- How much more effective is the EEP program than the previous NCDOT mitigation program in terms of expediting delivery of transportation projects?
- Based on the current and future projected cost of the EEP program, what is the return on investment (if any) based on the extent to which the EEP can help NCDOT to expedite the letting of transportation processes, thus allowing projects to be let sooner and presumably at a lower construction cost?
- What are the potential operational synergies between the EEP and the CWMTF? Are these synergies compelling enough to merge the two programs?
- What would be the cost of merging the EEP and the CWMTF programs?

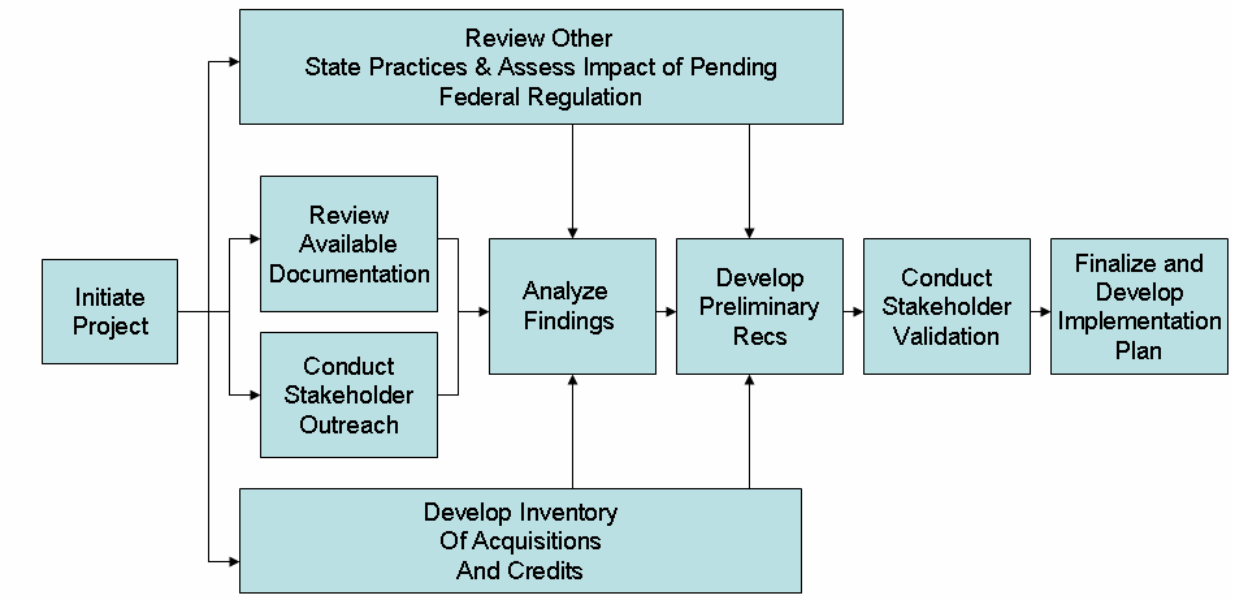
- What are the risks to merging the EEP and the CWMTF, and which mitigation strategies can be implemented to manage these risks?
- How would the merger of the CWMTF and the EEP affect the ability of NCDOT mitigation projects to effectively implement recognized compensatory mitigation recommendations and to meet prescribed ecological goals and standards?
- How does the cost of operating the EEP compare with the use of private mitigation bankers? Which approach is more cost-effective?
- Is the service delivery of the EEP program a candidate for outsourcing, given that there are mitigation bankers who specialize in performing this banking function as their core businesses?

D. Project Approach and Research Methodology

Dye Management Group, Inc.'s project approach and research methodology was specifically designed to address the research questions listed above. Our project approach extensively leveraged the experience and intellectual capital of our team members to allow completion of the project within an approximate 20-week time frame.

Exhibit I-I illustrates our project approach. The individual elements or phases of this approach are then described in further detail below.

Exhibit I-I: Project Approach for EEP/CWMTF Merger Study



1. Initiate project.

This stage involved conducting an initiation meeting with legislative staff and finalizing the detailed work plan and schedule for conducting the study. As part of this phase, the study team also identified key points of contact with the EEP, the CWMTF, and the NCDOT. The team also identified other key stakeholders with the USACE, EPA, the Federal Highway Administration (FHWA) and other organizations within the scope of the study.

2. Review available documentation.

The study team reviewed a wide range of program documentation, enabling legislation and other appropriate literature. Examples of documentation reviewed by the team include:

- The MOA that established the framework and policies for the EEP as well as supporting state legislation.
- The legislation establishing the CWMTF.
- Policy and procedure manuals developed by the EEP for a range of business processes, including watershed planning and the design/bid/build and full delivery procurement processes.
- The CWMTF's application and grant selection process.
- Available documentation on the NCDOT mitigation program prior to the initiation of the EEP.
- Documentation on NCDENR's stewardship program for providing ongoing monitoring and maintenance of mitigation sites, following the initial implementation and monitoring period when restoration is completed.

3. Conduct stakeholder outreach.

Our project approach incorporated considerable stakeholder outreach to ensure that various views on issues were known and available to the research team members and that any potential risks or issues surrounding potential recommendations were understood early in the process. A total of 41 interviews were conducted with a range of stakeholders including management, staff, board members, and grantees of the CWMTF; management and staff and a number of private sector partners of the EEP; appropriate NCDOT management and staff; NCDENR senior management; state and federal regulatory agency staff; FHWA division staff; private mitigation bankers; and environmental advocacy groups. Exhibit I-II illustrates an inventory of the interviews conducted by the research team by type of stakeholder.

Exhibit I-II: Inventory of Interviews by Stakeholder Type

Stakeholder Group	Interviews
CWMTF management and staff	4
CWMTF board members	2
CWMTF grantees	2
EEP management and staff	8
NCDENR senior management	1
State regulatory agency staff	1
Federal regulatory agency staff	5
NCDOT Board members, management and staff	7
FHWA Division staff	4
EEP on-call consultants/contractors/full delivery providers	3
Environmental Advocacy Organization	1
State Property Office	1
Private mitigation bankers	2
Total interviews:	**41**

4. Review other state practices.

The study team conducted detailed reviews of mitigation practices in four other states: Florida, Georgia, Virginia, and Washington. Florida, Georgia, and Virginia were selected due to their geographical proximity to North Carolina and the fact that, like North Carolina, they are experiencing rapid growth. Washington State was selected due to its legislatively mandated focus on functional replacement and the Washington State Department of Transportation's efforts to implement a watershed planning process that has some similarities to the process utilized by the EEP.

5. Assess impact of pending federal regulations.

The study team reviewed in detail and assessed the potential impact on the EEP of several pending federal regulatory efforts. This included:

- The March 2006 proposed rule-making from USACE and EPA on compensatory mitigation.
- The National Mitigation Action Plan, originally released in draft form in 2002, which has among its objectives an increased emphasis on watershed planning.
- The impact of the Supreme Court decision in 2006 in Rapanos v. United States and Carabell v. U.S. Army Corps of Engineers ("Rapanos/Carabell"), which casts doubt as to whether some waters, particularly tributaries, wetlands, ditches,

and non-perennial streams, fall within federal jurisdiction under the Clean Water Act.

6. Develop inventory of acquisitions and credits.

The study team collected and analyzed a number of data sets from NCDOT and EEP to develop a current snapshot of the inventory of acquisitions and credits. The data sets incorporated in this analysis include:

- High-quality preservation land acquisitions by NCDOT prior to EEP.
- Mitigation developed or acquired by NCDOT prior to EEP and the method of acquisition/development.
- High-quality preservation land acquisitions by EEP.
- Mitigation developed or acquired by EEP and the method of acquisition/development.
- The current NCDOT TIP and the projection of future mitigation needs based on the TIP.
- The anticipated surplus or gap in mitigation credits by cataloguing unit based on NCDOT's projected needs.

This detailed inventory of acquisitions and credits is included as Appendix A through G of this report.

7. Analyze findings.

In this phase, the team developed and documented a number of findings based on the data collected in the previous phases. This includes findings related to the operations of the EEP and the CWMTF, the surplus of credits in some watersheds, the relationship between the EEP and NCDOT, and the potential for greater organizational and programmatic synergies between the EEP and the CWMTF.

A critical part of this analysis process was the identification and detailed analysis of several alternative approaches for providing compensatory mitigation in North Carolina and for achieving programmatic synergies between the EEP and the CWMTF. The study team analyzed the following alternatives:

- The status quo in which the EEP and the CWMTF are separate programs, with the EEP carrying responsibility for providing compensatory mitigation for transportation projects.
- Maintaining the status quo organizationally with a range of policy changes and process improvements to streamline individual program operations and achieve greater programmatic synergies between the EEP and the CWMTF where appropriate.

- Merger of the EEP and the CWMTF.
- Return of responsibility for mitigation to NCDOT.
- Implementation of a privatized mitigation banking model.

8. Develop preliminary recommendations.

Based on the findings, the study team then developed a series of preliminary recommendations to address these findings. The team developed recommendations to address a number of issue areas identified in the study, including:

- The organizational and programmatic relationships between the EEP and the CWMTF.
- Steps to strengthen the relationships between the EEP and NCDOT.
- Specific policy changes and process improvement recommendations for the EEP.
- Process improvement changes at NCDOT to improve the quality of its demand forecast and to foster an improved working relationship with the EEP.
- Specific policy changes, process improvement, and technology recommendations for the CWMTF.

9. Conduct stakeholder validation.

In this phase, structured briefings on findings and preliminary recommendations were initially conducted with the co-chairs of Joint Transportation and Environmental Review and legislative staff to provide preliminary feedback to sponsors on the direction of the study. With the approval of the study sponsors, the study team then conducted structured briefings with appropriate management and staff of the EEP, the CWMTF, and NCDOT, and representatives of the USACE to validate our findings and obtain feedback on our proposed recommendations.

10. Finalize recommendations and develop implementation plan.

Based on feedback from the validation sessions, recommendations were adjusted if appropriate and an implementation plan was developed to provide guidance to the study sponsors and stakeholders on the relative timing and sequence for implementing the recommendations from the study. The findings and recommendations from the study were then incorporated into an initial and final draft of this report, and several presentations of study results were presented in different forums.

The remaining sections of this report document the study context and the findings and recommendations of this study in greater detail. These sections include:

Section II. North Carolina Programmatic Overview – This section provides an overview of the regulatory framework that establishes the requirements for mitigation for transportation

projects. It also provides an overview of the program objectives, scope, and operations of the EEP and the CWMTF. Likewise, it provides an overview of mitigation banking and describes the role of mitigation banking historically in North Carolina.

Section III. Other State Practices – This section describes compensatory mitigation practices for transportation projects in other peer states and assesses the applicability of practices used in these states to North Carolina.

Section IV. Potential Changes in Federal Regulatory Environment – This section discusses anticipated changes in federal guidance regulations and the potential impact of these regulatory changes on the operation of the EEP program.

Section V. Key Findings – This section provides an overview of the key findings of the study. This includes findings related to the operations of the EEP and the CWMTF, the analysis of the inventory of acquisitions and credits, the nature of the relationship between the EEP and the NCDOT, and the extent of current and potential organizational and programmatic synergies between the EEP and the CWMTF.

Section VI. Analysis of Organizational and Programmatic Alternatives – This section then presents an analysis of different organizational and programmatic approaches for more closely linking the EEP and the CWMFT as well as providing mitigation for transportation projects in North Carolina.

Section VII. Recommendations – Based on our findings and the organizational analysis, this section outlines a number of recommendations. This includes recommendations concerning the organizational and programmatic relationships between the EEP and the CWMTF, steps to strengthen the relationships between the EEP and the NCDOT, and specific policy changes (process improvement and technology recommendations) for both the EEP and the CWMTF.

Section VIII. Implementation Plan – This section presents a proposed implementation plan that provides a recommended timeline and sequencing for adopting the study recommendations.

Appendices- Appendix A through Appendix G provide the details of the inventory of acquisitions and credits developed by the study team.

II. North Carolina Programmatic Overview

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This section provides an overview of the regulatory framework that governs compensatory mitigation and discusses the various types of compensatory mitigation. It then provides an overview of the EEP objectives and the acquisition methods utilized by the EEP to provide mitigation, as well as an overview of mitigation banking and the role mitigation banking plays in North Carolina. Finally, it provides an overview of the CWMTF program.

A. Regulatory and Policy Context for Compensatory Mitigation

1. Federal regulation under the Clean Water Act.

The primary source of federal regulatory jurisdiction over wetlands is the Federal Water Pollution Control Act, or the Clean Water Act (CWA).[2] The CWA was established to restore and maintain the chemical, physical, and biological integrity of the nation's waters, including wetlands. The CWA section that established the wetlands regulatory program, §404, was enacted in 1972. Since that time, §404 has evolved into the major federal program regulating activities to the nation's aquatic resources, including wetlands. Primary responsibility for administering the §404 permitting program lies with the U.S. Army Corps of Engineers ("USACE"). Additionally, the U.S. Environmental Protection Agency (EPA) is responsible for establishing the environmental guidelines, or §404(b)(1) guidelines, that the USACE must use to evaluate the impact of proposed projects when making permit determinations. EPA also has the authority to veto permits approved by the USACE under §404(c). Other federal agencies, such as the U.S. Fish and Wildlife Service (FWS), Natural Resources Conservation Service (NRCS), and the National Marine Fisheries Service (NMFS), have the opportunity to review and comment upon USACE permit decisions.

The §404(b)(1) guidelines, binding rules established by EPA,[3] set in motion the process—referred to as the "practical alternatives analysis"—that the USACE must undertake before issuing a §404 permit to fill a wetland.[4] A 1990 Memorandum of Agreement between the Department of the Army and EPA ("1990 MOA") establishes a three-part process—or sequencing guidelines—to help guide compensatory mitigation decisions for individual (or "standard") permits and clarifies the protocol

[2] Federal Water Pollution Control Act, 33 U.S.C. §§1251-1387.
[3] Strand, Margaret N. *Wetlands Deskbook, 2nd Edition*. Washington DC: Environmental Law Institute, 1997. 41.
[4] 40 C.F.R. §230.10(d).

for determining the type and level of mitigation required under the §404(b)(1) guidelines. The sequencing steps are: (1) avoidance of adverse impacts to the aquatic ecosystem; (2) minimization of adverse impacts through project modifications and permit conditions, if impacts cannot be avoided; and, finally, (3) compensatory mitigation for unavoidable adverse impacts that remain after all appropriate and practicable minimization has been required.[5] In other words, before a §404 permit can be issued, the USACE must determine if there is a practicable alternative that avoids impacts to wetlands. If unavoidable, impacts must be minimized. Finally, any resulting unavoidable impacts must then be mitigated.

The 1990 MOA also states that for wetlands, the USACE will "strive to achieve a goal of no overall net loss of values and functions."[6] The no-net-loss policy has become the guiding principle for much of the federal wetlands program.

State regulation under The Clean Water Act

The Clean Water Act also provides a mechanism for states to certify federal permits or licenses, including §404 permits, for conformity with state water quality provisions. Under CWA §401(a)(1), applicants to the §404 program must "provide the licensing or permitting agency a certification from the state in which the discharge originates or will originate…" Furthermore, "no license or permit shall be granted until the certification required by this section has been obtained or has been waived … [or] has been denied by the state…."[7]

In North Carolina, this "§401 certification" provides the regulatory basis for a statewide wetland permitting program.[8] Any actions that require a federal permit, license, or approval that results in a discharge into "waters of the state," including §404 dredge and fill permits and nationwide permits, require the state's certification that proposed actions are consistent with North Carolina's water quality standards for "waters of the state." Additionally, in 2001, the state adopted similar rules pertaining

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[5] U.S. Environmental Protection Agency and U.S. Department of the Army. *Memorandum of Agreement Between the Environmental Protection Agency and the Department of the Army Concerning the Determination of Mitigation Under the Clean Water Act Section 404(b) (1) Guidelines*. 1990. II.C (1)-(3).

[6] U.S. Environmental Protection Agency and U.S. Department of the Army. *Memorandum of Agreement Between the Environmental Protection Agency and the Department of the Army Concerning the Determination of Mitigation Under the Clean Water Act Section 404(b) (1) Guidelines*. 1990. II.B.

[7] 33 U.S.C. § 1341 (a)(1).

[8] North Carolina also has a coastal permitting program, but this by and large does not require mitigation and applies only to the coastal zone.

to discharges into so-called "isolated waters" that fall outside of the jurisdiction of the Clean Water Act.[9]

The North Carolina Department of Environmental and Natural Resources (NCDENR) Division of Water Quality (DWQ) administers the §401 program. Authorized activities and exemptions are listed in the regulations. State regulations also describe the required application process, public notice and public hearing procedures, and application review and decision-making. Finally, the state has adopted its own mitigation requirements for authorized impacts.[10]

Under the federal Coastal Zone Management Act and the state Coastal Area Management Act, NCDENR's Division of Coastal Management (DCM) is the primary authority for state coastal resources, including wetlands. DCM issues permits for regulated activities and performs consistency calls on all federal permits issued in the North Carolina's 20 coastal counties.

2. State regulation of buffers.

With a goal of maintaining nutrient reduction functions, North Carolina has adopted the Nutrient Offset Program for the Neuse and Tar-Pamlico river basins and rules protecting riparian buffers within the Neuse, Catawba, Tar-Pamlico river basins and a portion of the Cape Fear.

The Nutrient Offset Program mandates nutrient reduction projects to offset exports related primarily to development activities in the Neuse and Tar-Pamlico River Basins, and along with the Buffer Rules are regulated by NCDENR's DWQ, although local governments that have been determined to meet state criteria may also assume authority to implement the buffer rules within their jurisdictions.

The Buffer Rules are designed to protect and maintain buffers for all areas within 50 feet of intermittent or perennial streams, lakes, ponds, or estuaries. Ditches, ephemeral streams, and wetlands are not jurisdictional under the state buffer rules.[11] Designated buffer areas are divided into two zones: Zone One, the inner 30 feet, is to remain undisturbed (with some exceptions); Zone Two, the outer 20 feet, must remain vegetated (with some exceptions). Specific activities are identified in the rule as "exempt," "allowable," "allowable with mitigation," or "prohibited."[12] Buffer

[9] N.C. ADMIN. CODE tit.15A § 02H.1301.
[10] *See* N.C. ADMIN. CODE tit.15A §§ 02B and 02H.
[11] N.C. ADMIN. CODE tit.15A § 02B.0233.
[12] Examples of "exempt" activities include driveway and utility crossings of certain sizes through Zone One, and grading and re-vegetation in Zone Two. "Allowable" and "allowable with mitigation" activities require review by the division and include activities such as new ponds in drainage ways and water crossings.

mitigation rules define the application process and compensation requirements for activities identified as "allowable with mitigation."

B. Compensatory Mitigation Mechanisms

1. Mitigation methods.

Compensatory mitigation may be accomplished through four principal methods: (1) restoration, or the re-establishment of wetland and/or other aquatic resource characteristics and function(s) at a site where they have ceased to exist or exist in a substantially degraded state; (2) creation, or the establishment of a wetland or other aquatic resource where one did not formerly exist; (3) enhancement, or activities conducted in existing wetlands or other aquatic resources that increase one or more aquatic functions; or, in exceptional circumstances, (4) preservation, or the protection of ecologically important wetlands or other aquatic resources in perpetuity through the implementation of appropriate legal and physical mechanisms. Preservation may include protection of upland areas adjacent to wetlands as necessary to ensure protection and/or enhancement of the aquatic ecosystem. Because regulatory programs operate under the goal of "no net loss," preservation is generally less preferable because it does not result in a gain of wetland acres and functions. This method is often used only in conjunction with other mitigation methods.

2. Replacement of acres and functions.

Mitigation replacement ratios, also known as debiting or compensation ratios, are the "proportional requirements for replacing wetlands that are permitted for fill."[13] These ratios establish the number of acres that a permittee is required to replace, given the number of acres impacted. Federal policy recommends that permittees provide a minimum of 1 to 1 acreage replacement for compensatory mitigation. However, establishing a consistent mitigation ratio facilitates the adequate and appropriate replacement of lost wetland acreage and functions. The location, wetland type, and compensation method of the mitigation wetland can influence the ratio. For example, mitigation replacement ratios are often "tailored" to guide compensatory mitigation to particular geographic areas, to discourage impacts to particular wetland types or to large wetlands, and to discourage out-of-kind mitigation. Permittees compensating outside of the watershed of the impact may be required to compensate at higher ratios.

Replacement ratios may also be expressed as "credit ratios," which establish the number of credits (as opposed to acres) that a permittee is required to purchase in order to provide compensation for the permitted impact. Credits are a standard unit of

[13] National Research Council. *Compensating for Wetland Losses under the Clean Water Act*. Washington, D.C.: National Academy Press, 2001. 108.

measurement for quantifying the net gain in wetland acreage or function that results from wetland restoration, enhancement, creation, or preservation that may be used to compensate for permitted impacts.

Although the 1990 MOA between EPA and the USACE articulates a national goal of "no overall net loss of values and functions," it also acknowledges the difficulty inherent in measuring and therefore replacing functions and values. As a result, the no-net-loss goal is often referred to in terms of acres and functions rather than values and functions, despite the fact that existing federal guidance encourages reliance on functional assessment methods in determining impacts and required mitigation for aquatic resources.

However, North Carolina has already taken a proactive approach toward advancing functional assessment, with the recent development of the North Carolina Wetlands Assessment Method (NC WAM), which provides a field method to determine the level of function of a wetland relative to a reference condition (where available). If adopted, NC WAM could be used toward mitigation planning and tracking functional replacement across the state. It should be noted that the state is also currently working on the NC Stream Assessment Method (NC SAM), although it will not be released for comment until 2008.

3. Compensatory mitigation "site" and "kind".

There are three primary mechanisms supported by the EPA and the USACE for permittees to meet their compensatory mitigation obligations. These are: (1) permittee-responsible mitigation; (2) purchasing credits from a mitigation bank; or (3) making a payment to an approved in-lieu fee mitigation sponsor. The federal agencies have issued a variety of guidance documents and a proposed rule to address the effectiveness of these different forms of mitigation. Compensatory mitigation performed on or adjacent to the development site is referred to as on-site mitigation. Alternatives to on-site mitigation include wetland mitigation banking, in-lieu fee mitigation, and project-specific off-site mitigation.

In-kind compensation is restoration, creation, enhancement, or preservation of wetlands similar to those being impacted (e.g., replacing forested wetlands with forested wetlands); out-of-kind compensation is restoration, creation, enhancement, or preservation of wetlands that provide different functions than those of wetlands being adversely affected by a project (e.g., replacing forested wetlands with open water wetlands).[14] Traditionally, regulatory agencies have preferred in-kind compensatory mitigation over out-of-kind mitigation; however, in cases where out-of-kind

[14] National Research Council. 2001. *Compensating for Wetland Losses under the Clean Water Act*. Washington, DC: National Academy Press

compensation is determined to be "practicable and environmentally preferable to in-kind compensation,"[15] exceptions may be determined on a project-by-project basis.

C. Mitigation Requirements in North Carolina

Federal compensatory mitigation requirements and preferences are described collectively among the §404(b)(1) guidelines, 1990 MOA, the U.S. Army Corps of Engineers Regulatory Guidance Letter No. 02-2, and guidance documents such as the 1995 *Federal Guidance for the Establishment, Use and Operation of Mitigation Banks* and 2000 *Federal Guidance on the Use of In-Lieu Fee Arrangements for Compensatory Mitigation under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act*.[16] Collectively, these documents describe regulatory requirements, guidelines, and preferences pertaining to mitigation methods, site/kind replacement, replacement ratios, and bank and in-lieu fee operations, among other criteria.

The state's water quality certification regulations also outline acceptable forms of compensatory mitigation for unavoidable losses of wetlands that are considered "waters of the state." State and federal regulators coordinate on permitting activities, and mitigation required under CWA §404 generally constitutes mitigation under state rules, unless USACE-required mitigation fails to meet state criteria. State requirements include, among other specified criteria: jurisdictional constraints; preferences for mitigation method (in order of preference: restoration, creation, enhancement, and finally, preservation); ratio requirements; and site/kind preferences, including a specified preference for the site of mitigation with respect to the river basin, physiographic province, and/or water supply watershed of the impact. The regulations also state a preference for mitigation through the state mitigation program over individual permittee-responsible mitigation.[17]

It should be noted that North Carolina does have stream mitigation guidelines that differ from the state's wetland mitigation guidelines. The NCDENR DWQ created the joint federal-state guidelines in conjunction with the U.S. Army Corps of Engineers - Wilmington District, U.S. Environmental Protection Agency - Region IV, U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS), and the North Carolina Wildlife Resources Commission. The guidelines account for the

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[15] *Federal Guidance for the Establishment, Use and Operation of Mitigation Banks*. 60 Fed. Reg. 228, 58605-58614. 1995. II. D (5).

[16] The USACE and EPA have also issued a proposed rule pertaining to compensatory mitigation, but the revised rule has not yet been issued.

[17] N.C. ADMIN. CODE tit.15A § 02H.0506 *et seq.*; N.C. ADMIN. CODE tit.15A § 02H .1305 *et seq.*

differences in impacts to fluvial systems and generally apply to non-tidal waters.[18] All mitigation providers must follow the stream mitigation guidelines to achieve mitigation credit.

North Carolina's Buffer Rules for the Neuse, Catawba, and Tar-Pamlico and portions of the Cape Fear river basins also describe mitigation requirements for regulated impacts to delineated buffer zones. Regulations outline mitigation site requirements, ratios, and permitted mitigation methods, which include payment to the Riparian Buffer Restoration Fund, donation of property, or restoration or enhancement of a non-forested riparian buffer. The rules also provide procedural guidelines for restoring or enhancing buffers, determining the amount of payment to the buffer fund, and determining the amount, location, and character of any donated property.[19]

D. North Carolina's Ecosystem Enhancement Program (EEP)

1. Program background.

The North Carolina General Assembly passed legislation in 1996 to create the Wetland Restoration Program (WRP), a state in-lieu fee program.[20] The program was designed to improve the permitting process and ecological effectiveness of compensatory mitigation by developing watershed-based restoration plans and ensuring that mitigation would be conducted in an ecosystem context. In 1998, the North Carolina Department of Environment and Natural Resources (NCDENR) entered into a Memorandum of Understanding with the U.S. Army Corps of Engineers that established operational guidelines for the WRP.

As a result of continued delays in acquiring permits for transportation projects because of problems with mitigation, in the summer of 2001, an interagency task force was organized to examine the procedures of NCDOT, NCDENR, and the USACE as they related to permitting transportation projects and associated wetland and stream mitigation. The task force found inefficiencies in the processes of the departments in developing suitable compensatory mitigation and recommended a new, innovative approach. The interagency task force recommended that North Carolina address the challenge of implementing the rapid expansion of its transportation infrastructure with environmental protection by making the state's environmental agency, not its transportation agency, responsible for providing required mitigation to compensate for the unavoidable impacts of transportation projects.

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[18] U.S. Army Corps of Engineers, *Stream Mitigation Guidelines (April 2003)*, *available at* http://www.saw.usace.army.mil/wetlands/Mitigation/Documents/Stream/STREAM%20MITIGATION%20GUIDELINE%20TEXT.pdf.
[19] N.C. ADMIN. CODE tit.15A §§ 02B .0242 *et seq.*, .0244 *et seq.*, and .0260 *et seq.*
[20] N.C. GEN. STAT. § 143-214.9 (2005).

In July 2003, the NCDENR entered into a Memorandum of Agreement (MOA) with the USACE and NCDOT to create the Ecosystem Enhancement Program, effectively replacing the WRP. The EEP, housed within the NCDENR, not only incorporated the functions of the former WRP, but also began administering a separate program that conducts mitigation exclusively for impacts resulting from NCDOT activities.

The cornerstone of the EEP is a detailed watershed-planning process that is designed to identify high-quality, cost-effective mitigation projects that will also contribute to watershed improvement and protection and open space preservation. The EEP provides a programmatic approach to providing in-ground, functioning compensatory mitigation for the majority of permitted impacts in advance of the loss of aquatic resources. The EEP sponsors four distinct in-lieu-fee programs, each with separate authorizing instruments and financial accounts:

- Stream and Wetland In-Lieu-Fee Program (formerly the Wetland Restoration Program), which provides mitigation, as appropriate, for impacts resulting from §404 permits, §401 water quality certifications, and/or Coastal Area Management Act permits (with the exception of most NCDOT permits). The program operates according to the 1998 Memorandum of Understanding Between the North Carolina Department of Environment and Natural Resources and the United States Army Corps of Engineers, Wilmington District and rules set out in the North Carolina Administrative Code (NCAC) (Title 15A, Subchapter 02R).
- Stream and Wetland In-Lieu Fee Program for NCDOT, which provides off-site mitigation exclusively for impacts resulting from NCDOT activities. The program operates according to the 2003 Memorandum of Agreement among the North Carolina Department of Environment and Natural Resources and North Carolina Department of Transportation and the United States Army Corps of Engineers, Wilmington District. NCDOT provides advance funding to the EEP through an approved biennial budget. Funding mechanisms are detailed in the 2004 Memorandum of Agreement Between the North Carolina Department of Environment and Natural Resources and the North Carolina Department of Transportation.
- Riparian Buffer In-Lieu Fee Program, which provides mitigation for impacts resulting from activities permitted under the state's riparian buffer rules in the Neuse, Tar-Pamlico, and Catawba River Basins as well as a portion of the Cape Fear River Basin. The program operates according to rules described in the NCAC (Title 15A, Subchapter 02B §§ .0242, .0243, .0244, .0250, and .0259).
- Nutrient Offset In-Lieu Fee Program, which provides nutrient reduction projects to offset exports related primarily to development activities in the Neuse and Tar-Pamlico River Basins (15A NCAC 02B §§ .0234 and 02B .0235). The program operates according to rules described in the NCAC (Title 15A, Subchapter 02B § .0240).

The MOA creating the EEP specified the legal authorities and responsibilities for NCDOT, NCDENR, and the USACE Wilmington District. The MOA essentially

provides the regulatory framework for the EEP's operations. In addition, a memorandum of agreement was established between NCDOT and NCDENR to further delineate the EEP's business processes. Today, educating NCDOT staff and other stakeholders about the roles and responsibilities of the EEP remains an ongoing effort.

Two advisory groups were formed to guide the EEP's operations. The Program Assessment and Consistency Group (PACG) consists of federal and state agency officials and technical professionals who review policy decisions made by the EEP management, address ongoing issues affecting the EEP's operations, evaluate program accomplishments, issues, and opportunities and help to manage required interagency process improvements. In this regard, the PACG's role is somewhat similar to the role of a mitigation banking review team (MBRT) in a traditional mitigation bank.

The Liaison Council comprises non-governmental mitigation stakeholders. The council provides recommendations on the EEP's structure, mission, and operations, and is briefed on the status of the program approximately three times a year.

The proposal to establish the EEP coincided with North Carolina Governor Mike Easley's directive to improve the overall environmental ethic of NCDOT and to strengthen communication and collaboration between NCDOT and the federal and state resource agencies it works with in implementing transportation projects. As a result, senior executives within NCDOT and NCDENR and the Wilmington district of the USACE supported the EEP concept from its inception. Today, most of the stakeholders that were interviewed by the study team assert that without this senior level buy-in and support, the significant changes required of and created by the EEP would not have been possible.

The programmatic framework and timetable to establish the EEP was developed in six weeks. FHWA provided $500,000 in initial seed money to create an EEP policies and procedures manual and begin development of a comprehensive information management system. The implementation of this management system is scheduled for the fall of 2007. To date, NCDOT has reimbursed EEP more than $175 million in compensation for mitigation provided or under development.

To help jumpstart the EEP and immediately remove mitigation from the critical path for obtaining a permit and initiating construction of transportation projects, EEP was initially given additional flexibility in the way that mitigation was provided. This included allowing the EEP to utilize high-quality preservation (HQP) lands in higher ratios, with the understanding that the required wetland and stream mitigation would be developed over a seven-year period. The goal was that, at the end of a seven-year ramp-up period, the EEP would have the actual mitigation in the ground in advance of the letting of the construction project.

This was accomplished by allowing EEP to apply HQP credits to meet the restoration requirement component of the mitigation. The remaining portion (the restoration equivalent portion) could also be used to meet mitigation requirements (this portion

was already allowed and still allowed). By allowing EEP to use HQP at a 10:1 ratio to cover a permit's requirement during the transition period, it is saying that the EEP can apply HQP to cover the entire portion of the permit's requirements --half to cover the restoration and half to cover the restoration equivalent. This ensures that the total number of credits are applied to cover the permit requirements. However, EEP still has to meet the restoration requirement by the end of the transition period.

When EEP applies restoration credits to meet the restoration requirement in the permits, any HQP applied to cover these restoration requirements would be refunded. In one way, this was helpful as preservation can be acquired more quickly than other forms of mitigation. One the other hand, it was quasi punitive in that EEP was procuring 1.5 times the amount of mitigation needed to cover the permits. However, the refunded credits will become part of the advanced mitigation that EEP is required to develop under the MOA.

2. Approaches utilized by the EEP to procure mitigation.

NCDOT annually provides the EEP with an updated mitigation demand forecast. This forecast is based on NCDOT's estimate of its mitigation requirements for projects scheduled for letting in the department's Transportation Improvement Program (TIP). EEP utilizes this demand forecast to determine the required types of mitigation as well as where and when the different types of mitigation will be needed. When the EEP determines that it will not have sufficient inventory to meet mitigation requirements, it then acquires the necessary mitigation through one or a combination of several different mechanisms. Mitigation mechanisms that the EEP has utilized to date include:

- Transfer of assets from NCDOT.
- Purchase of credits from private mitigation banks.
- Purchase of high-quality preservation lands.
- Purchasing projects from the CWMTF.
- Developing required mitigation through a design-bid-build process.
- Developing required mitigation through a full delivery process.

In addition, the EEP is evaluating the use of the design-build method and has proposed a pilot of this method on a project in the near future.

Each of these procurement methods are described briefly below.

(1) Transfer of assets from NCDOT.

Upon the initiation of the EEP, a process was developed to transfer the management of all mitigation projects under development by NCDOT to the EEP. These projects were typically transferred at the next logical milestone step in the project development

process. For example, if a project was currently in design, the design phase was managed to completion by NCDOT and then transferred to the EEP for the initiation of the construction phase.

(2) Purchase of credits from private mitigation banks.

Under this approach, the EEP purchases needed mitigation credits from an existing mitigation bank when available and practicable from a cost perspective.

(3) Purchase of high-quality preservation lands.

To meet the mitigation needs during the initial transition period, the EEP has acquired a number of high-quality preservation lands. The MOA allows the EEP to use higher ratios of these lands for mitigation during the start-up of the program, as long as the appropriate stream and wetlands restoration credits are developed within the first seven years of the program. In several situations (for example, the acquisition of Dupont Forest), the CWMTF participated in funding the acquisition of the property. This is a good example of an existing synergy point between the EEP and the CWMTF. In this situation, NCDOT, through the EEP, would receive mitigation credit for the acquisition of the high-quality preservation lands, commensurate with its share of the funding for the acquisition.

(4) Purchasing projects from the CWMTF.

The EEP has, on a few occasions, purchased projects outright from the CWMTF. This is a second example of an existing synergy between the two programs. This type of situation occurs when EEP requires mitigation in a cataloguing unit but has no existing credits available. The CWMTF, however, has provided funds to a grantee within the cataloguing unit to develop a stream restoration project. In this scenario, the EEP contacts the grantee to see if the grantee would be interested in letting the EEP buy out the grantee's project and take responsibility for completing the project. If the grantee is willing, the EEP then works with the CWMTF to buy out CWMTF's interest in the project. This is accomplished by the EEP compensating the CWMTF for its full project costs, including the amount of funding given to the grantee and the administrative cost associated with reviewing the application and managing the grant. Under this scenario, the EEP takes responsibility for completing the project and for monitoring the site according to specific regulatory requirements. The grantee has no role in completing the project. The grantee may have access to the site depending on the specific project arrangements and the conditions specified in the conservation easement.

The CWMTF staff currently develops this buy-out estimate and presents a recommendation to the CWMTF board for approval. Because this type of project buy-out arrangement has now been executed a few times, the CWMTF has now developed a clear methodology for calculating the administrative costs and determining the buy-out amount that EEP is required to pay.

It is not clear if this cost methodology results in the EEP paying more than it would have paid had it purchased a conservation easement from a property owner itself originally and then constructed the project itself. What is clear is that under this approach the EEP is reimbursing the CWMTF for the full extent of its investment in a project to comply with the CWMTF's statutory prohibition on mitigation, thus freeing up the funds from a project purchased by EEP to be utilized on additional grant(s). From an e EEP perspective, the EEP is paying an amount reasonably commensurate with what it would have paid had it constructed the project itself.

(5) Developing required mitigation through a design-bid-build process.

For mitigation under development by the EEP, the program is currently using one of two methods: design-bid-build or full delivery. Under design-bid-build, EEP secures the property through the State Property Office, then contracts for mitigation implementation in a multi-step contracting process that involves completing design, and then contracting through the State Construction Office for a construction firm to build the restoration project. The typical steps in this process are as follows:

1. The EEP uses an on-call contract of engineering firms to select a firm to perform site design. EEP's current on-call contract has approximately 20 firms, with contract caps of $750,000 per firm. Work is rotated through the firms, with an effort to balance work between the firms, while attempting where possible to leverage specialized expertise that one firm or another may have when it is required for a particular project.

2. An EEP Project Manager uses the EEP project Atlas, produced in the watershed plan that identifies priority sites for a restoration project, to gauge the interest of the property owners and screen the feasibility of conducting a restoration project on the site. If it appears feasible to develop a project on the site, EEP staff, will conduct follow-up discussions with the property owner(s) to confirm their interest in selling either all or a part of their property or allowing a conservation easement on their property (depending on the specific property need for a particular mitigation project).

3. When a willing seller has been identified and the site's feasibility has been confirmed through the initial screening process, the EEP engages the State Property Office to assist with obtaining an option on the property. This option commits the property owner to agree to sell to the State of North Carolina pending the successful completion of design activities. The option is then recorded against the property in order to protect the investment the EEP will make in designing the restoration project (typically in the range of $150,000 – $200,000).

4. To expedite this process, the acquisition of mitigation easements has been exempted from the requirement to obtain pre-approval for this acquisition from the Council of State or the General Assembly's Joint Committee on Government Operations (GovOpps). Instead, the State Property Office reports

monthly to the Secretary of the Department of Administration on any mitigation-related acquisitions. These reports are then provided to the Council of State and GovOpps.

5. Because NCDOT will seek reimbursement from FHWA for the federal share of the project, the EEP and the State Property Office are required to follow the federal Uniform Act when acquiring any property for NCDOT mitigation, which is designed to ensure that a property owner receives "just compensation" for the acquisition of his property. Just compensation is typically based on the fair market value for the property in question based on an appraisal, but it can sometimes be adjusted based on other factors. This fair market value is normally developed based on the property's value for its intended purpose (i.e., agriculture, etc.). Oftentimes, this creates a disconnect with a property owner who sees its intended purpose for the proposed transaction with the EEP as a mitigation site. If the property owner's parcel is one of the few meeting the technical needs of the EEP in a given watershed, this may give the property owner the expectation that the property is worth considerably more to the state than it will be valued at in the appraisal when assessed for its intended purpose.

6. In addition to the federal Uniform Act requirements, the EEP is also required to comply with state law that requires North Carolina state agencies to be careful stewards of the public funds in the acquisition of property. This requirement limits the extent to which EEP can offer a price above fair market value in order to close on the property. Finally, unlike with the acquisition of right-of-way for a transportation project, the state has no authority to use its powers of eminent domain to obtain property for a mitigation site. It is dependent upon being able to identify a willing seller and negotiating an agreeable price that is consistent with applicable federal and state statues and regulations.

7. The engineering firm then performs a detailed design for the site. In some situations, this design process will suggest changes in the size of the site needed for the restoration project. In a few cases, issues will also surface during the design process that suggest that the site is not a good candidate for a mitigation project and the project will be cancelled and, if appropriate, re-started at the site selection step.

8. Once design is completed, the EEP will exercise its option on the site and then take bids for the construction phase of the project. The construction project is let through the State Construction Office and is awarded to the successful contractor on a low bid basis.

9. The EEP typically retains the engineering firm that performed the design work to provide construction management services during the construction phase. In some cases, a second engineering consulting firm could be assigned these responsibilities.

10. The design firm, as part of their scope, is required to perform site monitoring for the first year after construction is completed. Monitoring for years two through five is contracted out separately.

The design-bid-build process typically takes approximately three to three and a half years to put mitigation in place from project initiation. This includes approximately one year for site selection, one to one and half years for site design and one year for construction.

(6) Developing required mitigation through the full delivery process.

The second method the EEP is currently using to develop mitigation is the full delivery process. In this approach, the EEP purchases credits from one or more private sector partners based on needs that the EEP identifies in one or more cataloguing units. While this process is essentially the acquisition of land and the associated services required to design and construct the mitigation on the selected site, the full delivery method is procured based on the concept that the EEP is acquiring a product or "widget" – an acceptable mitigation credit. . By acquiring a "product", EEP is allowed to manage the request for proposal (RFP) process and procure from the full delivery providers through the Division of Purchasing and Services who coordinates the award through the Department of Administration. The full delivery process typically involves the following steps:

1. The EEP identifies mitigation requirements that it would like to fulfill through the full delivery process.

2. The EEP develops and issues an RFP for its full delivery requirements.

3. Full delivery vendors identify potential sites within the candidate watersheds. While potential vendors may use EEP's watershed plans, our interviews with full delivery providers suggest that these firms are more likely to utilize their own geographic information system (GIS) based data analysis tools to identify technically viable sites, The full delivery providers then engage experienced real estate acquisition staff who are properly incentivized based on closing the sale of the property and winning the RFP to identify willing sellers and obtain options on properties.

4. The full delivery provider has more flexibility than the EEP does in the design-bid-build process when obtaining the property. If appropriate, the full delivery provider can offer the property owner more than fair market value for a particular site. The main constraint is the full delivery provider must factor this higher land cost into determining its overall fixed price bid and ultimately the low bidder will be selected out of the various proposals deemed technically qualified.

5. The full delivery vendor submits their proposal.

6. The EEP evaluates the full delivery proposals using a two-step process. The EEP first identifies proposals that it feels are technically viable. The EEP conducts this technical evaluation by reviewing proposals and conducting site visits of the proposed mitigation sites.

7. The EEP then opens the cost proposals of only those proposals deemed technically qualified. The EEP selects bidder based on cost, technical merit, and project size match to requested mitigation. .

8. The full delivery provider then executes its option on the properties included in its proposal. In completing the acquisition of the property, the full delivery provider works with the State Property Office to ensure that a conversation easement deeded to the state is properly recorded and filed with the appropriate county register of deeds.

9. The EEP compensates the full-delivery vendor at a series of predefined milestones throughout the life of the project. The acquisition of the site and the transfer of ownership interest in the site to the state is one of these predefined milestones.

10. The full delivery provider completes design and construction activities and delivers the completed "mitigation credits" to the EEP.

11. The full delivery provider performs monitoring of the site for the first five years after the completion of construction.

The full delivery process has been utilized extensively by the EEP during the initial build-out of the program. It is generally accepted that the full delivery approach is most appropriate in watersheds with greater mitigation needs since this technique lends itself to building larger single projects versus a number of smaller projects.

Because of the turnkey nature of the full delivery process, the EEP provides less oversight and management for the full delivery process than the design-bid-build process. This has caused some concern on the part of regulators who have asked the EEP to begin to take a more proactive role in monitoring and overseeing the execution of full delivery projects.

(7) Design-Build.

The EEP has recently proposed to pilot a design-build procurement approach. This approach has been utilized on some NCDOT projects in North Carolina in recent years. It is generally regarded to be an effective tool for reducing the elapsed time to complete a project versus the traditional design-bid-build approach because it has a single contractor selection step, after a firm has completed 30% design, which is then bid-on. It also allows in some situations for some design and construction activities to be performed in parallel where this is appropriate versus the inherent sequential process of design-bid-build where all design activities must be completed as a critical

path item before a specification can be prepared, a contract let and a contractor awarded the project.

Typically, the design-build process would involve some initial design activities to identify enough about the project to develop the specification to procure a design-build contractor. The selected design-bid contractor would then complete design and construct the project. In transportation projects, the design-bid contractor is selected on a qualifications based selection and then the price for completing the project is negotiated with the team scoring highest technically.

For the EEP, the design-build approach would likely involve the use of its existing on-call contractors to produce the 30% design, to be used for selection of the design-build contractor who would perform design, construct the mitigation and likely monitor the mitigation for the initial five years.

There are some questions concerning the approach EEP would utilize to procure the design-build approach. If it was determined that the final product, as in the full delivery process, is a "credit", a two step selection process could probably be utilized in which technically viable proposals are identified and then the costs are opened for only those proposals meeting the technical requirements, with the lowest bidder awarded the contract.

Alternatively, the EEP could use the more traditional qualifications based selection approach. However, this would require the support and involvement of the Department of Administration, unless the EEP was given the statutory authority by the General Assembly to conduct its own design-build process. NCDOT currently has this statutory authority.

E. Mitigation Banking

This section provides a brief overview of mitigation banking and describes the role that mitigation banking has played to date in North Carolina.

1. Mitigation bank defined.

A mitigation bank is a site where wetlands and/or other aquatic resources are restored, created, enhanced, or in exceptional circumstances, preserved expressly for the purpose of providing compensatory mitigation in advance of authorized impacts to similar resources. For purposes of compensating for impacts to waters and wetlands

regulated under Section §404, use of a mitigation bank may only be authorized when the impacts are unavoidable.[21]

The roots of mitigation banking date back to the 1960s and grew in importance with the Clean Water Act in 1972 and the Endangered Species Act of 1973. In 1988, President George Bush announced a Domestic Policy Council calling for "no net loss" of wetlands. Later, President Clinton endorsed this policy identifying mitigation banks as a viable option for compensating for wetland impacts. A federal guidance implementing the Clinton Administration's Wetland Plan was published outlining strict procedures and policies to ensure that wetland functions and values are preserved and defining mitigation banking as an appropriate approach for "preserving, enhancing, restoring or creating habitat to compensate for unavoidable wetland impacts."[22]

Each mitigation bank that is established must be supported by a formal, written banking instrument, prepared by an attorney and developed in coordination with the state's Mitigation Banking Review Team (MBRT). Generally, mitigation banks must be functioning in accordance with the success criteria for each particular bank prior to the withdrawal of credits.

The following are the minimum requirements used by a Mitigation Bank Review Team (MBRT) during its initial evaluation of all mitigation bank proposals:[23]

- The proposed bank will improve the ecological conditions of the regional watershed.
- The bank has the capacity to provide viable and sustainable ecological and hydrological functions for the proposed mitigation bank service area.
- It can be effectively managed in perpetuity.
- Construction of the bank will not destroy or degrade areas with high ecological value.
- The bank has a high probability of meeting the prescribed success criteria.
- It has the capability to meet the requirements of all other applicable federal and state laws.
- Adjacent land uses will not adversely affect the perpetual viability of the mitigation bank.

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[21] Federal Guidance for the Establishment, Use and Operation of Mitigation Banks, http://www.saw.usace.army.mil/wetlands/Mitigation/definitions.html#mitigation%20bank 60 FR 228, pp. 58605-58614 (28Nov95)

[22] http://www.mitigationbank.com/

[23] http://www.saw.usace.army.mil/wetlands/Mitigation/mitbanks.html#Find%20a%20Bank!

- The bank sponsor has the capacity to meet prescribed financial responsibility requirements.

2. Role of mitigation banking in North Carolina.

Mitigation banking has not traditionally played a key role in mitigation in North Carolina. In comparison with many peer states, North Carolina has a small number of banks, although it is not uncommon for states to contain few or zero mitigation banks. Currently, there are eight active banks and three active umbrella banks (containing a total of five sites).[24]

In discussions with mitigation bankers in North Carolina and in other states, several reasons were given for the limited role that mitigation banking has played in North Carolina to date. The most significant reason is the strict service area definitions used in North Carolina. The geographic service area (GSA) of a bank is the designated area wherein a bank can reasonably be expected to provide appropriate compensation for impacts to wetland or other aquatic resources. The GSA for wetland mitigation banks in North Carolina is the eight-digit cataloguing unit (CU) or HUC within which the particular bank site is located.[25] There could be some potential for a bank to work outside its HUC but this on an exception basis at the discretion of the regulator. In some other states, for example Alabama and South Carolina, there are banks with comparatively larger service areas, ranging from several river basins to the whole state in the case of one South Carolina mitigation bank.

In addition, with the establishment of the WRP and then the EEP, it could be argued that mitigation bankers are now put in the position of having to compete against a state agency that is operating as a monopoly should they choose to enter the market in North Carolina. One Virginia banker we interviewed as part of this study, for example, stated that state-dominated management of contracts and sales in North Carolina might limit the number of entrepreneurs willing to enter the market.[26]

The EEP. However, does work with mitigation banks whenever possible. As noted in Section II.D.2, the EEP has bought credits from mitigation banks in the past and expects to utilize this as an acquisition approach whenever it is feasible in the future.

F. Clean Water Management Trust Fund

North Carolina's open spaces and natural resources have become increasingly threatened by development pressures. Between 1982 and 1997, the state witnessed an 88 percent increase

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[24] Environmental Law Institute, 2005 Status Report on Compensatory Mitigation in the United States, *available at:* http://www2.eli.org/wmb/index.htm (April 2006).
[25] http://www.saw.usace.army.mil/wetlands/Mitigation/mitbanks.html#Find%20a%20Bank!
[26] Personal Interview with Brent Fults, Earthsource Solutions, Inc., May 3, 2007.

in its lands defined as urban areas, as well as an increasing conversion rate for forest, farm and rural lands. This trend, coupled with an expected 26 percent growth in the state's population, have motivated the creation of a variety of initiatives to preserve North Carolina's open spaces, aquatic resources, wildlife, and habitats.[27]

The North Carolina Clean Water Management Trust Fund (CWMTF) was established by the General Assembly in 1996 to provide grant funding for water protection and restoration projects to local governments, state agencies, and non-profit conservation organizations.[28] The CWMTF authorizing legislation directs CWMTF-funded projects to address "water pollution problems and focus on upgrading surface water, eliminating pollution, and protecting and conserving unpolluted surface waters, including urban drinking water supplies." The CWMTF's enabling legislation specifically prohibits it from funding compensatory mitigation.

The General Assembly also intended "that moneys from the Fund also be used to build a network of riparian buffers and greenways for environmental, educational, and recreational benefits." Likewise, legislators hoped that "the results of these efforts [would] also be beneficial to wildlife and marine fisheries habitats."[29] Between 1996 and 2005, the CWMTF helped protect over 317,529 acres of land and 3,612 miles of riparian buffers.[30]

The CWMTF is an independent state agency housed within NCDENR for administrative purposes.[31] A 21-member Board of Trustees appointed by the Governor and General Assembly reviews grant applications and makes funding decisions.[32] The Commissioner of Agriculture, Chair of the Wildlife Resources Commission, Secretary of NCDENR, and Secretary of the Department of Commerce comprise the CWMTF's Advisory Council, which advises the Board of Trustees on CWMTF allocations.[33]

1. Program funding.

Appropriations from the North Carolina General Assembly fund the CWMTF. CWMTF appropriations are submitted to the General Assembly in the Governor's budget as a yearly line item. Since its launch in 1996, program funding has increased

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[27] North Carolina Million Acre Plan, *available at* http://www.enr.state.nc.us/docs/millionplan.pdf at 21 (last visited August 23, 2005).
[28] North Carolina Clean Water Management Trust Fund, *at* http://www.cwmtf.net/cwmtffactsheet.htm (updated December 2004).
[29] N.C. GEN. STAT. Art. 18 § 113A-251.
[30] 2005 Annual Report of the North Carolina Clean Water Management Trust Fund, *available at* http://www.cwmtf.net/ar2005.pdf (last visited May 9, 2007).
[31] N.C. GEN. STAT. Art. 18 § 113A-255.
[32] Board members must be knowledgeable in one of the following areas: acquisition and management of natural areas; conservation and restoration of water quality; wildlife and fisheries habitats and resources; or environmental management. N.C. GEN. STAT. Art. 18 § 113A-255.
[33] N.C. GEN. STAT. Art. 18 § 113A-259.

to $100 million annually. Between 1996 and 2005, the CWMTF awarded 781 grants for a total of $595.8 million.[34] State agencies, local governments (or other political subdivisions of the state), and non-profit conservation organizations are eligible for CWMTF grants.[35] The Board of Trustees recommends, but does not require, matching funds to receive a CWMTF grant.[36]

2. Types of projects.

The CWMTF provides grants to:

- Enhance or restore degraded waters.
- Protect unpolluted waters.
- Contribute toward a network of riparian buffers and greenways for environmental, educational, and recreational benefits.

Types of projects funded by the CWMTF include:

- Improvements to wastewater treatment and collection systems.
- Stormwater management.
- Repair of septic tanks and removal of straight pipes.
- Wetlands, riparian buffer and stream restoration.
- Acquisition of buffers, floodplains, wetlands, and greenways.
- Agricultural best management practices.

CWMTF has usually used a twice-yearly application cycle but has just transitioned to a single annual application cycle. For the recently completed grants application cycle (March 2007), CWMTF has received applications for projects totaling $155 million.

3. Grant evaluation.

CWMTF grants are evaluated according to criteria drafted by the Board of Trustees with input from the CWMTF staff, other state agencies, and stakeholders. The grant evaluation criteria are delineated by project type and revised annually. Proposals are scored according to their contribution toward achieving the primary objectives of the Fund, which include: restoration of degraded waters or protection of unpolluted water;

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[34] 2005 Annual Report of the North Carolina Clean Water Management Trust Fund, *available at* http://www.cwmtf.net/ar2005.pdf (last visited May 9, 2007).
[35] N.C. GEN. STAT. Art. 18 § 113A-254.
[36] Clean Water Management Trust Fund Grant Evaluation Guidelines, *available at* http://www.cwmtf.net/criteria.htm (last visited May 9, 2007).

targeted areas; special significance of waters; preservation of waters with special uses; contribution to ecological networks; consistency with NCDENR - Division of Water Quality's Basinwide Plans; measurable and enduring outcomes; innovative procedures or technologies; development of riparian greenways; public education; and leverage of matching resources, among other criteria.[37] Applicants typically provide project data, and the CWMTF field staff perform site visits for each project proposal.

[37] *Id.*

III. Other State Practices

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The study team conducted detailed reviews of mitigation practices in four other states: Florida, Georgia, Virginia, and Washington. Florida, Georgia and Virginia were selected due to their geographical proximity to North Carolina and the fact that, like North Carolina, they are experiencing rapid growth. Washington State was selected due to its legislatively mandated focus on functional replacement and the Washington State Department of Transportation's efforts to implement a watershed planning process that has some similarities to the process utilized by the EEP.

This section documents the results of our research on other state practices. It includes a comparison of North Carolina with the other states that we reviewed, a discussion of the role of mitigation banking in these other states and an overview of several best management practices in regards to mitigation. It also provides some perspective on why these and other states have not actively pursued implementation of an EEP-like program in their states.

A. Comparing North Carolina with Other Peer States

Comparing mitigation practices in North Carolina to those in other states provides some context for an assessment of the state's current practice, as well as alternative mitigation scenarios. For this study, we chose to examine mitigation practices in Florida, Georgia, Virginia, and Washington. Although every state promulgates different permitting requirements, faces different regulatory challenges, and contains different types and amounts of aquatic resources, these states do share some common characteristics with North Carolina, including regions of fast growth and high transportation demand, state regulatory requirements in addition to CWA §404, and/or an abundance of aquatic resources.

Exhibit III-I below highlights key points of comparison for North Carolina and the other selected states and is followed by additional discussion of several of these points.

Exhibit III-I: Comparing Mitigation Practices in Peer States

Selected Mitigation Practice	*NC*	*FL*	*GA*	*VA*	*WA*
Programs requiring compensatory mitigation	404, 401/water quality, buffers, nutrient offset buffers	404, state "Environmental Resource Permits"	404	404, 401/water quality, tidal wetland	404, 401/water quality
Watershed-based mitigation planning/ implementation	NCEEP conducts a two-tiered, detailed watershed-planning process	Water Management Districts conduct regional planning	No	No	WSDOT "continually tries" to develop a discrete approach to watershed-based mitigation planning
Watershed-based siting requirement	2003 MOA requires mitigation within 8-digit CU	State statute requires mitigation within drainage basin; if not, permittee must conduct cumulative impacts analysis	Mitigation required within 8-digit CU, or in adjacent watershed if no mitigation opportunities available	Mitigation required within 8-digit CU, or in adjacent watershed if no mitigation opportunities available	None - proposed mitigation projects are evaluated on a case-by-case basis
• **# of 8-digit CUs** • **(avg. sq. miles/CU)**	• 58 • (928)	• N/A • (N/A)	• 52 • (1143)	• 53 • (807)	• 73 • (977)
Estimated annual DOT mitigation needs ***(Note: units reported vary across states)***	64,112 stream credits 9.0 riparian credits 51 non-riparian credits 0.5 coastal marsh credits 60.5 TOTAL wetland credits	In FY06, 2200 acres of mitigation for 104 acres of impact	667 wetland credits*, 31,513 linear feet of stream **credits ≠ acres. Rather, credits are based on function.*	Over next 6 years, VADOT projects 39,000 linear feet of stream, 130 acres non-tidal wetlands, 15 acres tidal wetlands	~20 to 50 acres

Selected Mitigation Practice	*NC*	*FL*	*GA*	*VA*	*WA*
Advance mitigation for DOT impacts	Yes	Yes	Yes, when bank credits are used (~90% of the time)	Yes, when bank credits are used (~90% of the time)	Not generally
DOT utilization of banks	N/A	~40% (DOT required by statute to purchase bank credits whenever available)	~90%	~90%	~12%
# of banks established within state, as of Dec. 2005 ***** Key: A-A = Approved-Active; A-S = Approved-Soldout; A-I = Approved-Inactive for other reason; P = Pending as of Dec. 2005; U = Umbrella Bank (i.e., may contain multiple sites)***	• A-A: 8 • A-S: 1 • A-I = 1 • P = 6 • U, A-A: 3 • U, P: 1	• A-A: 51 • A-S: 2 • P: 2	• A-A: 43 • A-S: 2 • P: 29 • U, A-A: 1	• A-A: 29 • A-S: 2 • P: 16 • U, A-A: 7 • U, A-I: 1 • U, P: 1	• A-A: 3 • A-S: 1 • P: 4 • U, A-A: 1 • U, A-I: 3 • U, P: 3
DOT project delays experienced as a result of mitigation requirements	No delays since initiation of the EEP	Yes, "occasionally"	Yes, "unable to estimate how often"	Yes, "very few, if any…less than 1% of the time"	Yes, "occasionally"

B. Utilization of Mitigation Banks

North Carolina has very few established banks and historically has not had a well-developed banking industry. According to ELI's 2005 inventory of banks, the state had eight active banks and three active umbrella banks (containing a total of five sites).[38] Furthermore, some portions of the state likely would not support a viable banking industry due to the small number and size of aquatic resource impacts.

[38] Environmental Law Institute, 2005 Status Report on Compensatory Mitigation in the United States, *available at:* http://www2.eli.org/wmb/index.htm (April 2006).

Florida, Georgia, and Virginia each utilize banking to a much greater degree. With 43 active banks as of 2005, Georgia's banking industry is very well established, and credits are available in many watersheds across the state.[39] The Georgia Department of Transportation (GDOT) has established its own banks, and prefers to use GDOT bank credits when available.[40]

Virginia also has a strong banking industry, with 29 active banks and seven active umbrella banks (containing a total of 12 sites) established across the state.[41] The Virginia Department of Transportation (VDOT) has established several of its own banks, but prefers to use private banking credits when available. VDOT officials have expressed that they do not want to be "in the mitigation business" and would prefer to purchase 100 percent of its required mitigation credits from private bankers if possible; however, certain regions of the state do not maintain a viable banking industry, and in those regions, VDOT has relied on its own banks for mitigation.[42]

Florida maintains one of the country's oldest and most active banking industries, with 51 active banks operating in the state.[43] State statute requires the consideration of mitigation banking for transportation impacts, if available;[44] however, some regions of the state have no active banks or have banks that have sold out of credits. In those cases, the regional Water Management District (WMD) often conducts project-specific mitigation. In cases where the WMD cannot identify a suitable project, the Florida Department of Transportation (FDOT) will conduct its own project-specific mitigation. In these cases, the Florida Department of Protection or a regional WMD still assumes long-term management of the site.[45]

Conversely, the State of Washington has very few established banks (three active banks and one active umbrella bank containing two sites), and the Washington State Department of Transportation (WSDOT) conducts most of its mitigation on a project-by-project basis. Like North Carolina, many regions of the state would likely not support a banking industry due to a lack of development in those areas.[46] Washington's regulatory structure may also discourage mitigation bankers from entering the state's industry. One banker reported that local jurisdictions' involvement in creating and using banks may hinder growth of the

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[39] Environmental Law Institute, 2005 Status Report on Compensatory Mitigation in the United States, *available at:* http://www2.eli.org/wmb/index.htm (April 2006).
[40] Personal Interview with Lisa Westberry, Georgia Department of Transportation, April 6, 2007.
[41] Environmental Law Institute, 2005 Status Report on Compensatory Mitigation in the United States, *available at:* http://www2.eli.org/wmb/index.htm (April 2006).
[42] Personal Interview with Earl Robb, Virginia Department of Transportation, April 5, 2007.
[43] Environmental Law Institute, 2005 Status Report on Compensatory Mitigation in the United States, *available at:* http://www2.eli.org/wmb/index.htm (April 2006).
[44] FLOR. STAT. § 373.4137.
[45] Personal Interview with Josh Boan, Florida Department of Transportation, April 5, 2007.
[46] Personal Interview with Bill Leonard, Washington Department of Transportation, April 24, 2007.

banking industry because they often do not favor mitigation banks or use other mitigation programs.[47] In addition, service areas, established by regulatory agencies, do not often appear large enough to support bank operations.[48]

C. Overview of Selected Best Practices

The federal agencies have issued a variety of guidance documents to improve the effectiveness of compensatory mitigation, including the 1990 Mitigation Memorandum of Agreement,[49] the 1995 *Federal Guidance for the Establishment, Use and Operation of Mitigation Banks*,[50] the 2000 *Federal Guidance on the Use of In-Lieu Fee Arrangements for Compensatory Mitigation under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act*,[51] and the U.S. Army Corps of Engineers' Regulatory Guidance Letter No. 02-2.[52,53] These documents collectively describe multiple required and preferred practices for compensatory mitigation. Among others, mitigation preferences include advance mitigation, or compensatory mitigation provided in advance of project impacts, thereby reducing the temporal loss of wetland acreage or functions; and watershed-based mitigation, or mitigation that addresses the specific resource needs of particular watersheds, ideally within the context of a comprehensive watershed plan.

Using a programmatic approach to mitigation planning, both North Carolina and Florida generally achieve advance mitigation for state department of transportation impacts. Although Virginia and Georgia do not use the same programmatic approach, in theory, the utilization of bank credits provides advance mitigation because they are established prior to

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[47] Personal Interview with Eric Gleason, TRC Companies, Inc., April 23, 2007.
[48] Personal Interview with Victor Woodward, April 20, 2007.
[49] *Memorandum of Agreement Between the Environmental Protection Agency and the Department of the Army Concerning the Determination of Mitigation Under the Clean Water Act Section 404(b) (1) Guidelines*. (February 6, 1990).
[50] Federal Guidance for the Establishment, Use and Operation of Mitigation Banks, 60 Fed. Reg. 58,605 (1995).
[51] U.S. Department of the Army, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration. *Federal Guidance on the Use of In-lieu fee Arrangements for Compensatory Mitigation under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act*. (October 31, 2000).
[52] U.S. Army Corps of Engineers. Regulatory Guidance Letter No. 02-2. (December 24, 2002).
[53] In March 2006, EPA and the USACE issued a proposed rule on compensatory mitigation that sets out to establish "to an extent that is feasible and practical, equivalent standards for all forms of compensatory mitigation." *See:* Compensatory Mitigation for Losses of Aquatic Resources, 71 Fed. Reg. 15,520 (2006) (to be codified at 33 C.F.R. pt. 325 and 332, and 40 C.F.R. pt. 230) (proposed Mar. 28, 2006). p. 15,521. However, as of May 2007, the revised rule has not yet been issued and is not expected to be finalized for several weeks or months.

the occurrence of permitted impacts.[54] Thus, for the 90 percent of state department of transportation impacts compensated with banks in those states, advance mitigation is likely achieved. Without a prevalence of banks or a programmatic approach to mitigation similar to that of North Carolina, the State of Washington does not uniformly achieve advance mitigation. Similarly, state departments of transportation in Florida, Virginia, and Washington reported occasional project delays as a result of mitigation associated with project permits, while Georgia reported some delays but was unable to estimate the frequency of delays due to problems with mitigation.[55]

With a programmatic approach to mitigation, watershed-based planning is achieved to a higher degree in North Carolina and Florida. Both states conduct planning to identify priority projects. In North Carolina watershed planning efforts are funded by its "customers;" in other words, NCDOT funds the majority of the planning as the agency's largest customer, while private consumers of the EEP's other in-lieu fee programs (wetlands and streams, buffers, and nutrients) fund the remaining portion of planning costs. Similarly, in Florida, the mitigation planning costs are incorporated into the fee paid to the WMD per acre of mitigation. These costs cover both mitigation planning and implementation.[56]

Georgia and Virginia, which rely heavily on the use of mitigation banks, have no established watershed-based mitigation planning initiative. In Washington, after the state legislature instructed regulatory agencies to authorize "innovative mitigation measures that are timed, designed, and located in a manner to provide equal or better biological functions and values compared to traditional on-site, in-kind mitigation proposals,"[57] WSDOT has attempted to develop a watershed-based mitigation planning process, but, to date, still conducts project-specific mitigation, of which the mitigation 'site' and 'kind' are negotiated on a case-by-case basis with regulators.[58]

Four of the five states examined achieve mitigation within demarcated watershed boundaries the majority of the time, if not 100 percent of the time. In North Carolina, the EEP's MOA requires mitigation to be sited within the same 8-digit cataloguing unit.[59] In Virginia, although state regulations build in flexibility for siting by stating a preference for on-site mitigation,[60] Virginia regulators report that mitigation is always achieved within the

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[54] Environmental Law Institute, Banks and Fees: The Status of Off-Site Wetland Mitigation in the United States, *available at:* http://www2.eli.org/wmb/index.htm (2001).
[55] Georgia officials were unable to estimate project delays.
[56] FLOR. STAT. § 373.4137.
[57] WASH. REV. CODE § 90.74.
[58] Person Interview with Gretchen Lux, Washington Department of Ecology, April 20, 2007.
[59] *Memorandum of Agreement Among the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U.S. Army Corps of Engineers, Wilmington District.* (July 22, 2003).
[60] VA. ADMIN. CODE § 9-25-210-115; VA. ADMIN. CODE § 4-20-390-20 *et seq.*

same 8-digit cataloguing unit.[61] Georgia regulators typically require mitigation within the same 8-digit cataloguing unit as the permitted impact, but may negotiate siting in an adjacent watershed if no mitigation opportunities are available within the same unit of the impact—some 5 percent of permitted projects.[62] Florida laws tie mitigation siting to drainage basins by requiring a cumulative impact analysis for any mitigation proposed outside the basin of the permitted impact. However, once the cumulative impact analysis has been conducted, permittees may still choose to implement mitigation outside the basin of the permitted impact, and may work with regulators to identify suitable options. Because the size of the drainage basin varies greatly across the state, some of Florida's WMDs may allow mitigation outside the drainage basin more often than others.[63] Finally, Washington has no state regulatory tie to mitigation siting within the watershed, and WSDOT projects are negotiated on a case-by-case basis.[64]

D. Why Haven't Other States Adopted EEP-like Programs?

North Carolina's EEP has been recognized nationally both as a model for achieving high-quality compensatory mitigation and as a coordinating body among state and federal regulatory agencies and permittees, including NCDOT. In addition to providing advance mitigation and conducting watershed-based mitigation planning, the EEP also implements the following "best practices" with respect to environmental outcomes:

- Providing the USACE with information in advance on the schedule for implementation of mitigation projects.
- Assessing the ecological suitability of sites for achieving the goal and objectives of compensatory mitigation.
- Using funds collected by the program for replacing wetland functions and values and not to finance non-mitigation programs and priorities.
- Specifying a schedule for conducting the activities that will provide compensatory mitigation.
- Requiring mitigation sites to be protected in perpetuity.

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[61] Personal Interview with Allison Dunaway, Virginia Department of Environmental Quality, May 2, 2007.
[62] Personal Interview with Mike Ruth, April 23, 2007.
[63] Florida operates on a system of "drainage basins." Basins are set by rule and determined by the regional WMDs. Boundaries are based on a combination of U.S. Geological Survey hydrologic units, regional planning areas, hydrologic engineering (e.g. canals), and/or other factors. The size varies greatly, particularly from WMD to WMD. For example, South Florida WMD has hundreds of basins, mostly due to the high number of engineered water structures, other WMDs have less than ten, which are based largely on watershed units. Personal Interview with Connie Bersok, Florida Department of Environmental Protection, April 9, 2007.
[64] Person Interview with Gretchen Lux, Washington Department of Ecology, April 20, 2007.

- Accomplishing site protection using appropriate real estate arrangements.
- Conducting regular monitoring to document funds received, impacts permitted, how funds are disbursed, types of projects funded, etc.
- Specifying requirements for monitoring (i.e., specific parameters to be monitored).
- Specifying a geographic service area (i.e., the 8-digit cataloguing unit).
- Providing provisions for remedial actions and responsibilities (i.e., a contingency fund).
- Providing financial, technical, and legal provisions for long-term management and maintenance; and utilizes accounting procedures to track payments received from permittees.[65]

However, to date, no other state has established a program similar to that of the EEP. This begs the question—if the EEP is a national model, why are other states not doing it? Many state officials reported that, although the EEP serves as an interesting model, their current state practices, which developed under much different circumstances, are meeting the mitigation needs of the state adequately. Furthermore, generating the momentum and political will to support such a program seems a doubtful prospect.[66] In Florida in particular, the state is already achieving watershed planning and advance mitigation with their current model.[67] Others reported that an EEP-like program would require funding and manpower that is simply not available.[68]

Some state officials were favorable towards the idea of establishing an EEP-like program within their states, as it would allow for the state to guarantee high quality mitigation, provide a programmatic approach to watershed planning, and provide stability towards planning and siting implementation, which may sometimes be a contentious and difficult process.[69]

A recent article published by Ecosystem Marketplace, an online newsletter that covers ecosystem service markets, echoes these insights. Contributors argue that states with robust

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[65] Environmental Law Institute, The Status and Character of In-Lieu Fee Mitigation in the United States, *available at:* http://www2.eli.org/wmb/index.htm (June 2006).
[66] Personal Interview with Mike Ruth, April 23, 2007; Personal Interview with Lisa Westberry, Georgia Department of Transportation, April 26, 2007.
[67] Personal Interview with Connie Bersok, Florida Department of Environmental Protection, April 20, 2007; Personal Interview with Josh Boan, Florida Department of Transportation, April 25, 2007; Personal Interview with Sheri Lewin, Mitigation Marketing, April 20, 2007.
[68] Personal Interview with Stewart Sligh, April 26, 2007; Personal Interview with Allison Dunaway, Virginia Department of Environmental Quality, May 2, 2007.
[69] Personal Interview with Earl Robb, Virginia Department of Transportation, April 30, 2007; Personal Interview with Bill Leonard, Washington Department of Transportation, April 24, 2007.

banking markets may not have a need for the EEP model and that aligning agency and private goals and interests to initiate such a program is difficult. The article also suggests that financing future mitigation may be difficult for state departments of transportation and that the proposed rulemaking, which would have substantial impacts to EEP's operation as currently written,[70] lends uncertainty to establishing such a program. However, EEP's watershed planning, prioritization of projects, and clear performance measures are desirable from many stakeholder perspectives, and contributors also indicate that EEP's status as young program suggests it may be too early to judge how replicable it may be for other states.[71]

[70] In March 2006, EPA and the USACE issued a proposed rule on compensatory mitigation that sets out to establish "to an extent that is feasible and practical, equivalent standards for all forms of compensatory mitigation." *See:* Compensatory Mitigation for Losses of Aquatic Resources, Fed. Reg. 15,520 (2006) (to be codified at 33 C.F.R. pt. 325 and 332, and 40 C.F.R. pt. 230) (proposed Mar. 28, 2006). p. 15,521. However, as of May 2007, the revised rule has not yet been issued and is not expected to be finalized for several weeks or months.

[71] The Katoomba Group's Ecosystem Marketplace, EM Dialogue: The Question of Statewide Mitigation Programs, *available at:* http://ecosystemmarketplace.com/pages/article.opinion.php?component_id=4929&component_version_id=7259&language_id=12 (2007).

IV. Impact of Potential Changes in Federal Regulatory Environment

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This section discusses anticipated changes in the federal 404 program and the potential impact of these changes on the operation of the EEP. Specifically, the study team conducted a detailed review and assessment of the potential impact on the EEP of several pending federal actions, including:

- The March 2006 proposed rulemaking from USACE and EPA on compensatory mitigation.
- The 2002 National Mitigation Action Plan, which has among its objectives an increased emphasis on watershed planning.
- The impact of the 2006 Supreme Court decision in *Rapanos v. United States* and *Carabell v. U.S. Army Corps of Engineers* ("*Rapanos/Carabell*"), which casts doubt as to whether some waters, particularly tributaries, wetlands, ditches, and non-perennial streams, fall within federal jurisdiction under the Clean Water Act.

Each of these items is discussed in further detail below.

A. The Proposed Mitigation Rule

In March 2006, the U.S. Environmental Protection Agency (EPA) and U.S. Army Corps of Engineers ("USACE") issued a proposed rule on compensatory mitigation that sets out to establish "to an extent that is feasible and practical, equivalent standards for all forms of compensatory mitigation."[72] In brief, the rule as written in March 2006 includes the following measures, among others:

- Establishes standards and criteria for all mitigation methods (except in-lieu fee mitigation, which it proposes to eliminate altogether).
- Affirms mitigation sequencing (avoidance, minimization and compensatory mitigation).
- Requires the watershed approach to compensatory mitigation.
- Prescribes standards for choosing appropriate mitigation, including site selection, "in-kind" replacement, replacement ratios, the use of banks, the use of preservation, and buffer mitigation.

[72] Compensatory Mitigation for Losses of Aquatic Resources, 71 Fed. Reg. 15,520 (2006) (to be codified at 33 C.F.R. pt. 325 and 332, and 40 C.F.R. pt. 230) (proposed Mar. 28, 2006). p. 15,521.

- Sets administrative requirements and performance standards.
- Addresses mitigation banking establishment and credit withdrawal.
- Eliminates in-lieu fee (ILF) mitigation as an option for providing compensatory mitigation.[73]

As written, the proposed rule would have significant effects on the EEP.[74] First, abolishing ILF as a mitigation option would prohibit the EEP from offering this option to private individuals and public agencies seeking mitigation, including NCDOT. These parties would then either conduct the mitigation themselves or purchase bank credits where available. Because the state has many regions with no operating banks, flexibility for permittees would be greatly reduced.[75]

Secondly, the proposed rules do not authorize a programmatic approach to mitigation, except through umbrella banking instruments. Whereas the EEP's current approach allows the state to offer watershed-based mitigation planning and implementation, re-organizing into an umbrella bank would lessen the efficiency of the current program's operations by requiring an additional level of regulatory oversight involving the review and approval of each restoration project by an interagency review team.[76]

In addition, NCDOT may experience increased costs and delays as banking instruments and projects undergo regulatory review processes. Furthermore, eliminating ILF reduces mitigation options for NCDOT impacts.[77] Finally, at least initially, the state's lack of mitigation banks would likely return the burden of conducting mitigation to NCDOT, a model that has been widely recognized as both inefficient and ineffective.

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[73] Compensatory Mitigation for Losses of Aquatic Resources, 71 Fed. Reg. 15,520 (2006) (to be codified at 33 C.F.R. pt. 325 and 332, and 40 C.F.R. pt. 230) (proposed Mar. 28, 2006). p. 15,521.

[74] Letter from Michael F. Easley, Governor, State of North Carolina, to Benjamin H. Grumbles, Assistant Administrator, U.S. Environmental Protection Agency, and John Paul Woodley, Jr., Assistant Secretary of the Army (Civil Works) (June 30, 2006) (*available at* http://www.nceep.net/pages/Federal_Rule_Response_Combined.pdf).

[75] Letter from Michael F. Easley, Governor, State of North Carolina, to Benjamin H. Grumbles, Assistant Administrator, U.S. Environmental Protection Agency, and John Paul Woodley, Jr., Assistant Secretary of the Army (Civil Works) (June 30, 2006) (*available at* http://www.nceep.net/pages/Federal_Rule_Response_Combined.pdf).

[76] Letter from Michael F. Easley, Governor, State of North Carolina, to Benjamin H. Grumbles, Assistant Administrator, U.S. Environmental Protection Agency, and John Paul Woodley, Jr., Assistant Secretary of the Army (Civil Works) (June 30, 2006) (*available at* http://www.nceep.net/pages/Federal_Rule_Response_Combined.pdf).

[77] Letter from Michael F. Easley, Governor, State of North Carolina, to Benjamin H. Grumbles, Assistant Administrator, U.S. Environmental Protection Agency, and John Paul Woodley, Jr., Assistant Secretary of the Army (Civil Works) (June 30, 2006) (*available at* http://www.nceep.net/pages/Federal_Rule_Response_Combined.pdf).

However, the proposed rule also states that the agencies are "seeking comment on alternative approaches that would retain in-lieu fee programs as a separate category of mitigation with somewhat different requirements."[78] The comment period ended in June 2006. The USACE and EPA received dozens of comments from multiple agencies and organizations across the country, including a response from the State of North Carolina.[79] As of May 2007, the USACE and EPA have examined and synthesized comments, but have not yet agreed to any revisions, partially due to delays from other developments at the federal level, such as the *Rapanos/Carabell* Supreme Court decision (please refer to Section IV.C below) and re-issuance of the USACE Nationwide Permits.

The agencies will conduct the process of considering and incorporating comments over the next several weeks or months; thus, at the time of this writing, it is difficult to predict the definite effects of the rule on mitigation in North Carolina. However, because the EEP is hailed nationally as a model and held in high esteem by USACE and EPA regulators both at the regional and national levels, there exists a realistic possibility that rule revisions would allow the EEP to continue its current operation to a high degree.

B. The National Mitigation Action Plan

In response to various critiques of the effectiveness of wetland compensatory mitigation in the United States, EPA, USACE, and the Departments of Agriculture, Commerce, Interior, and Transportation released the National Wetlands Mitigation Action Plan in 2002. The plan includes 17 tasks designed to improve the ecological performance and results of compensatory mitigation, including the creation of federal guidance on "site and "kind" replacement, as well as compensatory mitigation in a watershed context. Originally planned for completion in 2005, the proposed rule and other pressing federal tasks, such as re-issuance of the 2007 Nationwide Permits, have delayed implementation of some of the action items. However, the plan is still regarded as a priority by federal agencies, and several of the action items are planned for completion once the mitigation rule and other pressing federal tasks have been completed.[80]

Although the plan is effectively "on hold" as of May 2007, it still warrants discussion for purposes of this study due to its strong focus on watershed-based mitigation. Together with the proposed rule, which also emphasizes watershed-based mitigation, the Plan indicates

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[78] Compensatory Mitigation for Losses of Aquatic Resources, 71 Fed. Reg. 15,520 (2006) (to be codified at 33 C.F.R. pt. 325 and 332, and 40 C.F.R. pt. 230) (proposed Mar. 28, 2006). p. 15,521.

[79] Letter from Michael F. Easley, Governor, State of North Carolina, to Benjamin H. Grumbles, Assistant Administrator, U.S. Environmental Protection Agency, and John Paul Woodley, Jr., Assistant Secretary of the Army (Civil Works) (June 30, 2006) (*available at* http://www.nceep.net/pages/Federal_Rule_Response_Combined.pdf).

[80] National Mitigation Action Plan Interagency Workgroup, National Mitigation Action Plan, *available at:* http://www.mitigationactionplan.gov/ (June 2006).

that momentum towards watershed-based mitigation is growing nationally. North Carolina has historically been on the leading edge of this approach and is one of the first programs in the nation to adopt a discrete watershed planning process for wetland and stream compensatory mitigation for impacts authorized under Clean Water Act §404 and the state water quality laws. Thus, it is likely that future federal guidance will continue to support the state's direction in terms of utilization of a watershed-based planning process.

C. Rapanos v. United States and Carabell v. U.S. Army Corps of Engineers

On June 19, the Supreme Court rendered a fractured decision in *Rapanos v. United States* and *Carabell v. U.S. Army Corps of Engineers* ("*Rapanos/Carabell*"). The Court divided 4-1-4 in a decision that throws a heavy burden back on the lower courts, federal and state regulators, and citizen and watershed groups. Four justices, led by Justice Antonin Scalia, concluded in a "plurality" opinion that the Clean Water Act only protects continuously flowing open waters plus wetlands that have a "continuous surface connection" with such flowing waters. As such, the opinion cast doubt as to whether some waters, particularly tributaries, wetlands, ditches, and non-perennial streams, fall within federal jurisdiction. The fifth justice forming the majority for decision, Justice Anthony Kennedy, disagreed with the plurality reasoning, but nevertheless joined in sending the cases back to the lower court. Justice Kennedy wrote that any particular tributary or wetland that is not itself navigable must be demonstrated on a case-by-case basis to have a "significant nexus" to waters that are "navigable-in-fact." Critically, Justice Kennedy noted that the necessary nexus need not be a hydrologic connection, but can be based on some other chemical, physical, or biological relationship. Given the split decision, Justice Kennedy's opinion controls the likely scope of jurisdiction for the Clean Water Act for at least the next several years.

The full extent and impact of *Rapanos/Carabell* has not yet been fully revealed. Questions abound as to what constitutes "Waters of the United States" and how to determine a "significant nexus" with traditionally navigable waters. The USACE and EPA have each issued memos suspending enforcement and regulatory activities until they sort out what jurisdiction they believe they have. Federal guidance pertaining to the decision is expected to be released soon. However, many lower courts are already relying on the decision to determine federal jurisdiction.

While the prospect of case-by-case determinations of Clean Water Act jurisdiction will put heavy burden on federal regulators, effects in North Carolina may be minimized because state jurisdiction over "waters of the state" does not rely on federal jurisdiction. In 2001, the state adopted legislation specifically protecting so-called "isolated wetlands" that may fall outside federal jurisdiction. State rules, adopted in reaction to the *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers (SWANCC)* decision that cast doubt on federal jurisdiction over some intrastate isolated wetlands, would presumably also

apply to waters that may be excluded from federal jurisdiction as a result of *Rapanos/Carabell*.[81] The isolated wetlands rules state that "[i]f the U.S. Army Corps of Engineers or Natural Resources Conservation Service determine that a particular water is isolated and not regulated under Section 404 of the Clean Water Act, then discharges to that water shall be covered by [these rules]."[82] In addition, a 2002 North Carolina Court of Appeals decision made clear that "waters of the state" includes wetlands, ruling that the state had authority to adopt regulations protecting wetlands. Because the North Carolina Supreme Court declined to hear the case, the decision is final in North Carolina.[83]

[81] N.C. ADMIN. CODE tit. 15A, r. 02H.1300; N.C. GEN. STAT. § 143-215.
[82] N.C. ADMIN. CODE tit.15A, r. 02H.1301.
[83] *See North Carolina Home Builders Association v. Environmental Management Commission*, No. COA02-99 (N.C. App. Dec. 31, 2002), *available at:* http://www.aoc.state.nc.us/www/public/coa/dsheets/020099-1.htm.

V. Key Findings

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This section outlines a number of key findings identified by the study team. These findings include observations about the efficiency and effectiveness of the operations of the EEP and the CWMTF and an analysis of the causes and extent of the surplus of mitigation credits in some watersheds. Other findings include challenges and opportunities in regards to the relationship between the EEP and NCDOT and the extent of organizational and programmatic synergies between the EEP and the CWMTF.

For ease of presentation, our findings have been categorized as follows:

- Overall efficiency and effectiveness of the original NCDOT mitigation program and the EEP.
- Analysis of the inventory of acquisitions and credits.
- Efficiency and effectiveness of the EEP's watershed-based planning process.
- Effectiveness of the EEP's project delivery practices.
- On-going challenges in the organizational relationships between NCDOT and the EEP and FHWA.
- Extent of programmatic integration between the EEP and the CWMTF.
- Efficiency and effectiveness of the CWMTF's operations.

A. Overall Efficiency and Effectiveness of the Original NCDOT Mitigation Program and the EEP

This subsection presents our findings in regard to the overall efficiency and effectiveness of both the NCDOT mitigation program that was in place prior to the start of EEP and the EEP itself. Findings in this regard include:

- The NCDOT mitigation program was not effective; however, there is no doubt that learning was obtained through this program that has benefited the EEP.
- No permit has been delayed for mitigation since the initiation of the EEP, resulting in significant cost avoidance in terms of increased construction costs for NCDOT.
- The EEP has a strong focus on continuous process improvement.
- The EEP is recognized nationally as a model program.
- The EEP has credibility issues among some policy-makers in the state.

Each of these findings are described in further detail below.

1. The NCDOT mitigation program was not effective in meeting its program objectives; however, there is no doubt that learning was obtained through this program that has benefited the EEP.

NCDOT operated its own mitigation program until 2003. NCDOT utilized several different techniques to provide mitigation. NCDOT utilized project specific on-site mitigation, purchased credits from banks and established its own banks under contract with private-sector providers.

Under this program, it is estimated that approximately 40% of projects requiring mitigation experienced delays in their letting dates based on the inability to obtain a permit because of mitigation. These delays resulted in increases in the overall cost of constructing projects and affected the credibility of NCDOT with numerous policy-makers and the public when it could not meet its planned commitments to let projects.

As NCDOT management and the Board of Transportation realized the impact of delays due to mitigation, the department initiated an advance mitigation program. This program encountered a number of difficulties. One of these difficulties was the learning curve of the staff and consultants engaged by the department in terms of how to implement an advanced mitigation program. A second key difficulty was the frequent changes in priorities in the TIP.

The EEP was initiated just at the point in time where the department was likely beginning to get some of the benefit of the experience being gained by its staff. It is widely believed by stakeholders at NCDOT and the EEP that these lessons learned were beneficial to the EEP in the start-up of its operations.

2. No permit has been delayed for mitigation since the initiation of the EEP, resulting in cost savings to NCDOT of at least $6.5 million.

Whereas up to 40% of projects requiring mitigation were delayed prior to the inception of the EEP, no projects have been delayed because of mitigation since the start of the EEP. This represents a cost avoidance in terms of increased construction costs of about $6.5 million for NCDOT based on the following assumptions:

- Based on information provided by the NCDOT Fiscal section, since the inception of the EEP, approximately $1,285,297,173 worth of projects requiring some form of mitigation have been let to construction.
- Assuming 40% of these projects would have been delayed for an average of four (4) months under the previous NCDOT mitigation program, this represents a $5.3 million savings in avoidance of increased construction costs based on a 3.8% average annual change in the Federal-Aid Highway Construction Price Index since 1990. In addition, using the average annual change since 1990 is a very conservative approach since there has in reality been much more volatility in this index since the initiation of the EEP in 2003.

3. The EEP has a strong focus on continuous process improvement.

The EEP has leveraged its position as a start-up to emphasize defining and implementing standardized processes and procedures. FHWA provided the EEP with a seed grant of $500,000 to help jump start its organizational development. This effort has been led by a highly competent, hard-working staff that today continues to have continuous process improvement as a core organization value and maintains a strong focus on streamlining processes and identifying and resolving bottlenecks in its operations.

4. The EEP is recognized nationally as a model program.

EEP is highly regarded by regulatory agency staff in North Carolina and at the federal level and has been recognized nationally as an innovative and model program. It has won numerous national awards from various organizations including:

- Recognition of NCDOT and NCDENR in 2003 by the Federal Highway Administration for outstanding environmental stewardship.
- Designation of EEP by FHWA as one of 15 exemplary ecosystem initiatives nationwide.
- A national award for innovation in 2003 from the National Association of Development Organizations.
- Being selected in April 2005 by the National Association of Environmental Professionals for their National Environmental Excellence Award.
- Receiving designation in August 2005 as one of the top new initiatives in state government from the national Council of State Governments.

5. The EEP has credibility issues among some policy-makers in the state.

While the EEP has been well received nationally, the program has a number of communication and credibility issues among some policy-makers in North Carolina. At the core of these concerns are issues such as:

- The 2003 MOA establishing the EEP prohibits applying “surplus” credits between watersheds (cataloguing units), which has led to the perception that NCDOT may in effect be paying twice for the same mitigation.
- Because the cost of mitigation is now more clearly understood, concerns have arisen about the cost of providing mitigation. Under the prior NCDOT program, the cost of mitigation was buried in the total cost of constructing the project. In addition, the cost of mitigation on a per acre and per linear foot basis is also clearly increasing, with this increase more pronounced in urban areas.

- EEP communication strategies and outreach to stakeholders has not been as effective as it could be in addressing these concerns of various policy makers and other stakeholders.

B. Analysis of the Inventory of Acquisitions and Credits

This subsection summarizes key findings from the analysis of the inventory of acquisitions and credits. These findings include:

- The EEP drives its internal business planning from NCDOT's demand forecast based on the TIP; this continues to have a certain amount of volatility.
- NCDOT is becoming more accurate with estimating their mitigation needs.
- There is limited flexibility in the MOA in terms of being able to apply mitigation outside of the cataloguing unit of the permitted impact.
- The EEP was designed based on two key assumptions that are no longer to proving to be true: an increasing construction program and an increasing need for mitigation. This may be contributing to over-building of mitigation.
- There are apparent surpluses in mitigation credits in some watersheds.
- Acquisition of high quality preservation lands by NCDOT and the EEP account for a significant portion of the surplus issue.
- The genesis of the surplus issue predates the initiation of the EEP.

Each of these findings are discussed in greater detail below.

1. The EEP drives its internal business planning from NCDOT's demand forecast based on the TIP; this continues to have a certain amount of volatility.

Volatility/changes in the TIP continue to be an issue. These changes in the TIP are based on a number of factors (i.e., funding constraints, changes in policy maker priorities, etc.) and create a lack of predictability in NCDOT's demand forecast and increase the risk of the EEP developing mitigation that will not be needed.

2. NCDOT is becoming more accurate at estimating their mitigation needs.

NCDOT staff are becoming more precise in terms of developing estimates of the mitigation that will be required. This is likely both the result of more experience in developing estimates and an increased sensitivity within NCDOT about the cost impact of incorrect estimates. The new NCDOT accounting methodology that initially allocates the cost of mitigation (regardless of what project the mitigation may be used for ultimately) to the NCDOT division in which the mitigation is physically resident is also increasing management awareness and attention on the need for accurate estimates.

3. **There is limited flexibility in the MOA in terms of being able to apply mitigation outside of the cataloguing unit of the permitted impact.**

While the regulations express a preference to performing mitigation in the cataloguing unit of the permitted impact, the MOA operates at a more stringent standard, specifically requiring mitigation in the same eight-digit cataloguing unit in which the impact occurred. This MOA stipulation removes the flexibility NCDOT had to negotiate for some flexibility on a case-by-case basis at the time of applying for the permit.

There are some exceptions to this policy. It should be noted that EEP can still request at the permit application stage the ability to use other CUs, thought this is not normally done in practice. Likewise, regulatory agencies have enacted a policy for the Catawba 03 cataloguing unit that allows for adjacent CU usage. In addition the, Carbonton project has the ability to utilize the adjacent CU to meet its mitigation requirements.

4. **The EEP was designed based on two key assumptions that are no longer proving to be true: an increasing construction program and an increasing need for mitigation. This may be contributing to over-building of mitigation if these changed assumptions are not properly reflected in NCDOT's estimates of mitigation requirements.**

The NCDOT construction program is not growing in size annually as it did in the late 1990s and the early part of this decade. By definition, this means there will be less need for mitigation. At the same time, better project design from other streamlining initiatives (Merger01, etc.) may be resulting in less mitigation need (i.e., impacts avoided and/or minimized to a greater degree mean less need for compensatory mitigation).

5. **There are apparent surpluses in mitigation credits in some watersheds.**

Our analysis of the inventory of acquisitions and credits suggest that there is now or will be surpluses in mitigation credits in some watersheds. Surplus credits are those that currently show no forecasted need, which is different from securing excess credits at this point in time to meet forecasted needs and achieve "ahead of impact" goals. The detailed documentation of this inventory, which was constructed by the study team with the help of data provided by NCDOT and the EEP is provided in Appendix A through Appendix G of this report. Some examples of this surplus include:

- As illustrated in Appendix G, by June 2010 (Year 7 of the MOA), the EEP will have met NCDOT's forecasted needs and achieved MOA goals of having completed mitigation projects available ahead of impacts in 43 of the 54 CU's.

- By June 2013 (Year 10 of the MOA), the EEP will have instituted sufficient mitigation in 22 of the 54 hydrologic units in North Carolina (please refer to Appendix G). This means that the EEP will meet or slightly exceed NCDOT's mitigation projections for permitting needs for that mitigation type. Based on the data and notwithstanding credits needed to permit MOA Year 11 (July 2013 to June 2014), Year 12 (July 2014 to June 2015), Year 13 (July 2015 to June 2016), Year 14 (July 2016 to July 2017) and Year 15 (July 2017 to June 2018), there are:
  - Two basins that will have over 30,000 mitigation equivalents of stream
  - Seven basins that will have over 100 mitigation equivalents of riparian wetlands
  - Six basins that will have over 100 mitigation equivalents of non-riparian wetlands
  - Seven basins that will have over 100 mitigation equivalents of riparian wetlands

These thresholds for "significant surplus" were chosen based on the judgment of the study team that the surplus mitigation represented an amount of mitigation that was more than would likely be utilized by a significant new location project within a cataloguing unit.

The geographic location of these "significant surpluses" by cataloguing unit and NCDOT division are presented in Exhibit V-1 through V-III. Exhibit V-1 illustrates the significant surplus for stream restoration; Exhibit V-2 presents this information for riparian wetlands and Exhibit V-3 presents this information for non-riparian wetlands. Excessive surplus was defined at 30,000 feet for stream and 100 acres for wetlands.

- A review was conducted of the NCDOT mitigation transfers to the EEP and the EEP acquired sites against the June 2013 (Year 10 of the MOA) 'surplus.' There are likely some basins, particularly in the Neuse, Cape Fear and Pasquotank, that have 'surplus' mitigation due to NCDOT transfers. A correlation exists here although there are two basins with a surplus that are influenced by EEP acquired sites. Additionally, EEP does not actually know which sites will be used for mitigation until the Section 404/401 permit requirements are due.

The target information provided by EEP for 2013 (Year 10 of the MOA) is in mitigation equivalents. This equivalent is an estimate because the Section 404/401 permit requirements usually require two mitigation credits for each acre/foot of impact; there are some cases when the mitigation credit is one for one.

Exhibit V-1: Stream Restoration Mitigation Projected Surplus – June 2010

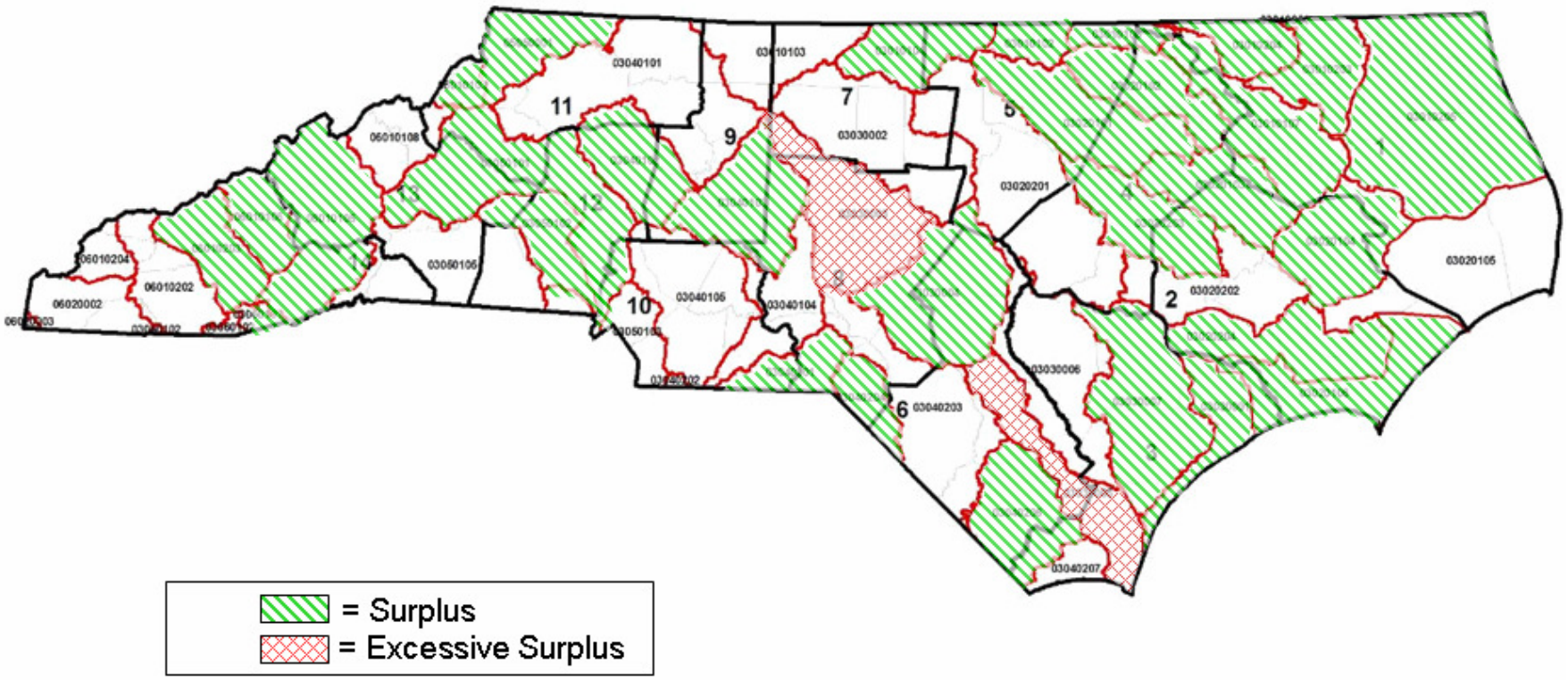


Exhibit V-2: Riparian Restoration Mitigation Projected Surplus – June 2010

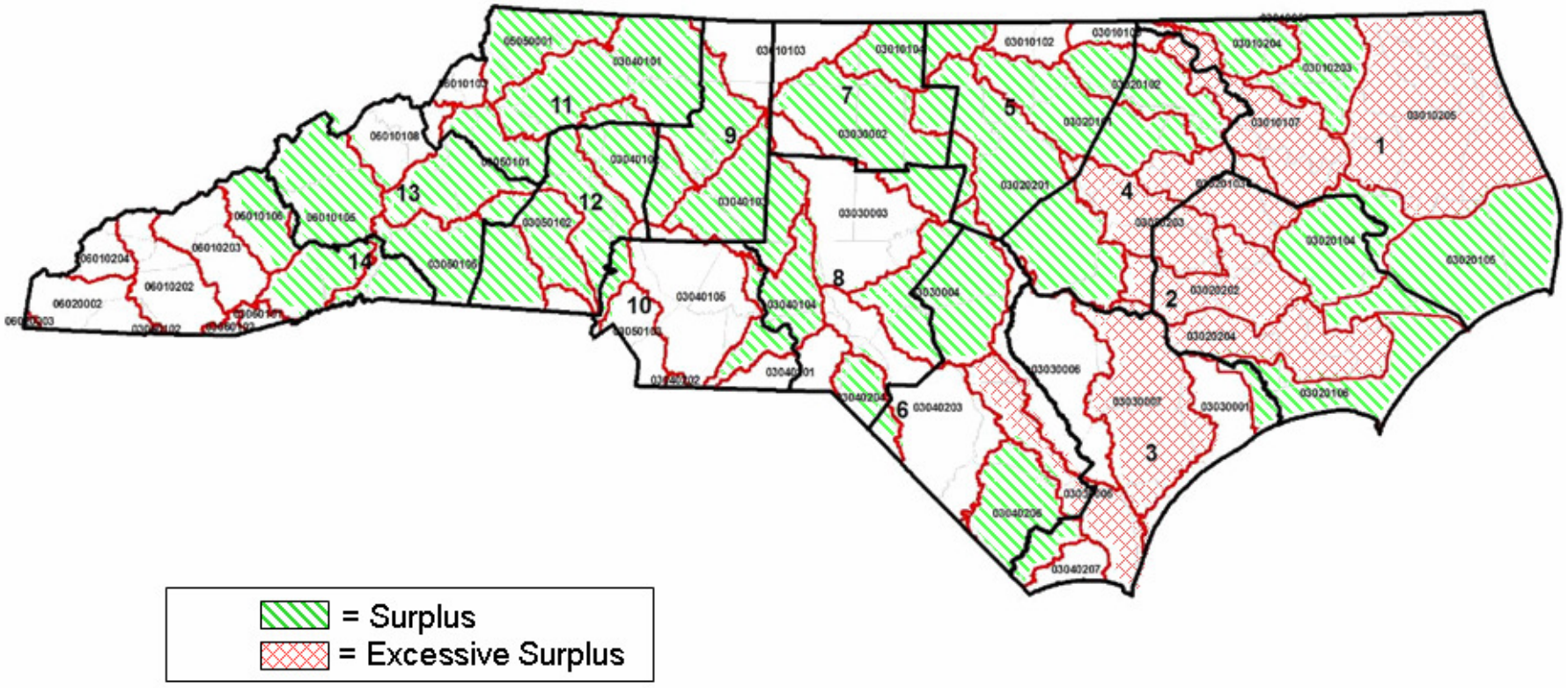
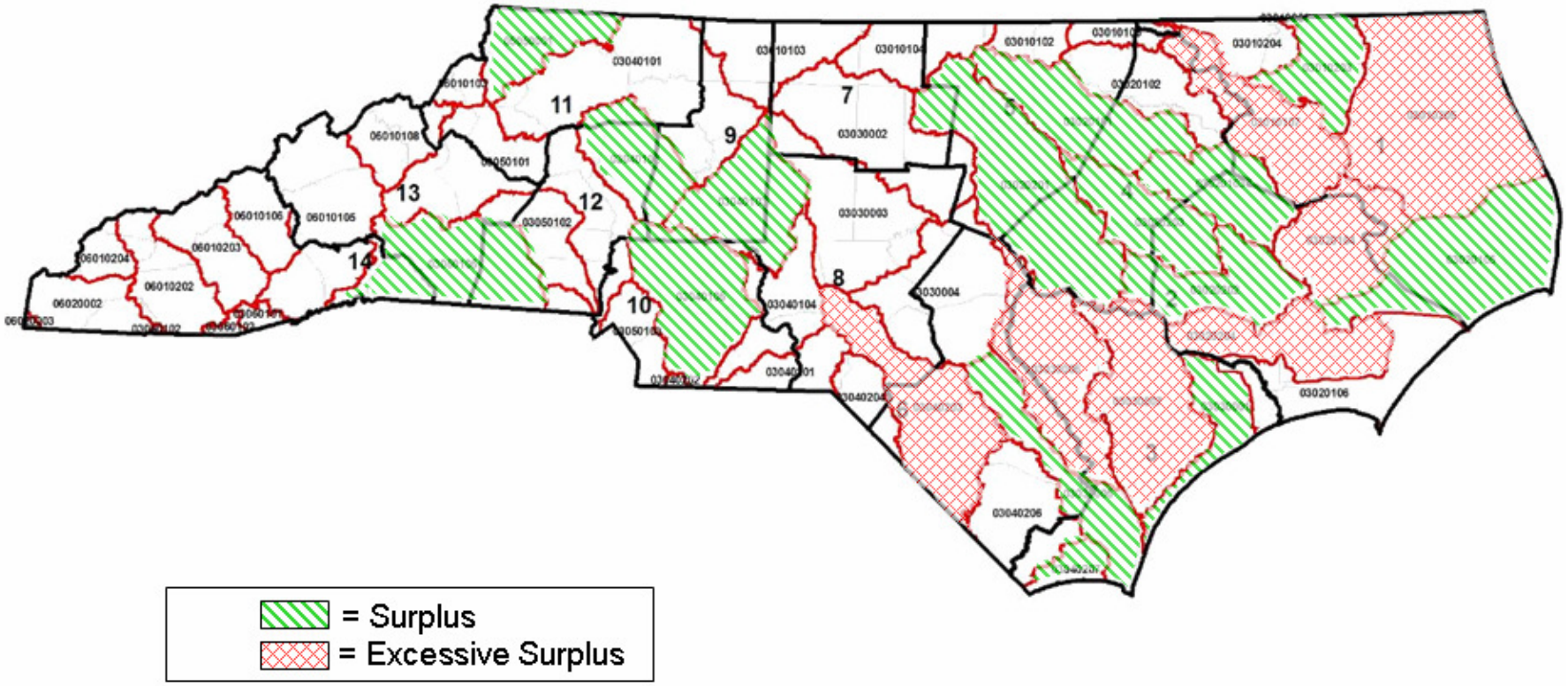


Exhibit V-3: Nonriparian Restoration Projected Surplus – June 2010



6. Acquisition of high quality preservation lands by NCDOT and the EEP account for a significant portion of the surplus issue.

As illustrated in Appendix A, high quality preservation (HQP) land costs total over $78 million between the EEP and NCDOT acquisitions. 2.1 miles of the stream tracts include uplands. . It is possible that these uplands could be re-sold and added back to the tax base; this would reduce the money spent to acquire the high quality preservation and enable more funding of transportation and/or other projects. Additional survey and mitigation work would be required to locate the buffers, create a new plat (hold mitigation in fee simple or conservation easement) to sub-divide the tract, appraise the sub-divided tract(s) and then sell the land.

7. The genesis of the surplus issue predates the initiation of the EEP.

The start of the surplus issue predates the initiation of the EEP. Upon realizing the number of permits (40% plus) that were being delayed for mitigation, the Board of Transportation and NCDOT began its own advance mitigation program in the late 1990s. However, because of extensive volatility in the TIP, limited experience in estimating mitigation requirements and a lack of experience in properly planning and executing an advance mitigation program, the NCDOT program was largely ineffective. The result was the acquisition of mitigation in a number of cataloguing units where it was not actually needed and, in some cases, a shortage of mitigation where it was actually needed.

Of special interest in this regard is NCDOT's investment in high quality mitigation lands. NCDOT, based on figures provided by NCDOT's Fiscal section (the cost numbers provided the EEP are slightly different) has invested over $39 million in high quality preservation lands. These tracts and their purchase price as reported by NCDOT are illustrated in Exhibit V-4 below.

Exhibit V-4: Inventory of NCDOT High Quality Preservation Acquisitions

Acquisition Name	Ecoregion	Amount Paid Per NCDOT Fiscal
Roquist Pocosin	Northern Outer Coastal Plain	4,135,465.14
Haw River State Park	Central Piedmont	424,592.00
White Pines/Newton	Central Piedmont	170,000.00
Davis Tract/Yadkin	Central Piedmont	241,938.00
Eno River /Poplar River	Central Piedmont	534,000.00
Eno River State Park	Central Piedmont	2,318,400.00
Duke Forest/Haw River	Central Piedmont	3,025,000.00
Little Mountain	Central Piedmont	4,180,000.00
Allen Site	Central Piedmont	565,000.00

Acquisition Name	Ecoregion	Amount Paid Per NCDOT Fiscal
Lone Mountain	Southern Piedmont	773,000.00
Rankin Tract	Southern Piedmont	3,213,095.00
Mingo Tract	Northern Mountains	7,500,000.00
South Fork of the New River	Northern Mountains	777,000.00
Lost Bridge Tract	Southern Mountains	511,600.00
Needmore Tract	Southern Mountains	7,500,000.00
Dupont Forest Site	Southwestern Mountains	4,000,000.00
Total Acquisition Cost:		**$39,869,090.14**

8. The EEP does transfer credits between the NCDOT program and the in lieu fee program. This has allowed surplus NCDOT mitigation credits to be sold to the in lieu fee program.

The EEP does sell surplus NCDOT credits to the in lieu fee (ILF) program when surplus NCDOT credits are available in cataloguing units where the ILF program has needs There has been over $13 million in surplus credits purchased by the ILF program from the NCDOT programs since this "buy sell" program was initiated in March 2005. This has generated substantial savings in the cost of mitigation to NCDOT. Similarly, the NCDOT MOA program has been able to purchase surplus credits from the ILF program which has decreased the number of new mitigation projects which are necessary. This has also created additional savings.

9. NCDOT has not allowed EEP to sell any surplus high quality preservation (HQP) land credits.

EEP has requested NCDOT to allow HQP surplus credits to be sold to the ILF program. To date, however, NCDOT has elected not to sell surplus HQP. This represents a missing revenue stream for NCDOT. It would also be a method to decrease the HQP surplus.

C. Efficiency and Effectiveness of the EEP's Watershed-Based Planning Process

This subsection describes a number of findings related to watershed planning. These findings include:

- Potential disconnects between the outputs from the watershed planning process and the actual site selection process.

- Limited synergy between DWQ's basin-wide planning process and the watershed planning process.
- Limited integration between the EEP's watershed planning process and the CWMTF's grant application and selection process.

Each of these findings are described in further detail below.

1. Potential disconnects between the outputs from the watershed planning process and the actual site selection process.

The EEP is intended to be a programmatic approach to mitigation based on a strong, proactive, watershed-based planning approach. However, the connection between the needs and opportunities defined by the watershed planning process and the realities of site selection, which involve the need to identify a willing seller, are not always evident, particularly in the full delivery model.

Watershed plans, where available, do assist with site selection. As of May 3, 2007, the EEP's Watershed Planning and Project Implementation section had delivered 31 projects identified through the local watershed plans. Furthermore, EEP's Operational Strategic Plan includes 59 additional projects identified through the local watershed planning process to be implemented over the next five years.

However, interviews with stakeholders who contract with EEP to perform design-bid-build activities suggest that the value of these plans is limited by the need to identify individuals who are willing to do business with EEP, independent of candidate sites and opportunities that may be identified by the watershed plan.

Furthermore, based on our interviews, watershed plans do not appear to be extensively utilized by full delivery providers to drive their site selection activities, even though proposers are awarded bonus points during technical evaluation when they propose projects in targeted watersheds as identified in the plans. Private sector providers who are bidding on full delivery projects utilize their own internal GIS-based tools and site selection specialists to identify and engage willing sellers. Given that the full delivery process represents the largest portion of EEP's procurement activity currently (66%), this could potentially lead to the development of mitigation sites that have little correlation to the needs identified in the watershed plans. In addition, the full delivery contracting process requires the EEP to select the lowest cost proposal deemed technically qualified. While targeted watersheds are part of the criteria in the technical evaluation, there is no explicit requirement that a full delivery provider's site must be rated highly in the local watershed plans.

2. Limited synergy between DWQ's basin-wide planning process and the EEP watershed planning process.

The EEP prepares detailed watershed-based mitigation plans for selected watersheds, while DWQ prepares basin-wide plans to help identify impaired waters. Basin-wide

water quality planning is a watershed-based approach designed to support restoring and protecting the quality of North Carolina's surface waters. Basin-wide water quality plans are prepared by DWQ for each of the 17 major river basins in the state every five years.

These concurrent water quality planning initiatives are intended to build from and share data with each other. DWQ's basin wide plans feed data and information on 303(d) (impared waters) information to EEP for use in the EEP CU screening process, and EEP plans provide detailed data from river basin restoration plans and local watershed plans back to DWQ for incorporation into DWQ basin wide plans.

However, EEP and DWQ plans do not follow the same schedule due to EEP needing river basin restoration and local watershed planning information based on NCDOT's forecasted impacts. To ensure synergy and cooperation, EEP planners and DWQ staff meet throughout the year to share data, review each others plans, participate in each others public and stakeholder meetings, and also meet twice a year to discuss participation and additional improvements.

While the coordination between EEP and DWQ on these water resource planning processes was not a primary focus of this study, the team believes that there is some obvious overlap between these two planning processes and that additional study would be appropriate to identify opportunities for economies of scale, shared staffing and other potential effiencies between these two planning processes. In addition, there are also other water resource planning processes that should be included in any detailed study of linkages and potential efficiency and economy of scale opportunities across the state's water resource planning efforts. These include the river basin plans prepared by the Division of Water Resources and other planning efforts performed by the Public Water Supply Section in Environmental Health.

3. Limited integration between the EEP's watershed planning process and the CWMTF's grant application and selection process.

There is limited integration between the EEP's detailed watershed plans and the CWMTF's grant application and selection process. Grant applicants receive bonus points on their application if their project is in an area that has a watershed plan. However, there is no specific linkage between the needs identified in the plan and the scope of the proposed application. No bonus points, for example, are given for identifying a project that addresses specific needs identified as the highest priorities in the watershed plans.

D. Effectiveness of the EEP's Project Delivery Practices

This section describes our findings related to the EEP's project delivery practices including:

- The EEP needs the capability to utilize a variety of procurement methods

- There is the potential for unintended competition between EEP and its full delivery providers
- A lower than desired cap on the on-call contracts could be affecting EEP's ability to utilize the most experienced technical resources
- The EEP's project management staff are continuing to come up the learning curve, although there continue to be gaps in project management skills and interdisciplinary experience

Each of these items are described in further detail below.

1. The EEP needs the capability to utilize a variety of procurement methods.

The EEP currently utilizes both the design-bid-build and full delivery methods and EEP is investigating the feasibility of piloting a design-bid procurement approach. Our analysis suggests that this range of delivery methods is required in order to address different types and sizes of projects that the EEP is required to deliver. Full delivery is most appropriate for larger projects, for example for a cataloguing unit with a significant amount of anticipated needs that could be addressed by one or two large projects. On the other hand, design-bid-build may be more appropriate for smaller projects where a full delivery provider might not be able to achieve their desired economies of scale.

Based on data provided by EEP, design-bid-build appears to be a more cost effective approach. Exhibit V-5 illustrates a comparison of the cost of full-delivery and design-bid-build projects completed to date. This comparison is based on 104 full-delivery projects and 45 design-bid-build projects.

Exhibit V-5: Cost Comparison between Full-Delivery and Design-Bid-Build

	Rural		Urban	
Credit Type	Full Delivery	Design-Bid-Build	Full Delivery	Design-Bid- Build
Stream ($/Stream Credit)	$264	$220	N/A	$314
Riparian Wetlands ($/wetland credit)	$38,802	$14,564	N/A	$43,569
Non-Riparian Wet	$17,845	N/A	N/A	N/A

The EEP has been utilizing the full delivery model more often as it ramps up the program since full delivery generally has a more compressed project delivery timeline than design-bid-build from project initiation to the start of construction. However, the EEP has indicated that it plans to make greater use of design-bid-build in the future. Likewise, the regulatory agencies have asked the EEP to provide additional oversight and management on the full delivery projects.

2. There is the potential for unintended competition between the EEP and its full delivery providers.

In situations where the EEP is conducting design-bid-build projects and full delivery projects in the same cataloguing unit, the EEP may be in effect competing against itself for particular sites. This puts the EEP at a disadvantage in its design-bid-build process, since it is constrained in the offers that it can make to property owners by the federal Uniform Act and state law. Full delivery providers, on the other hand, have the potential for pricing the land more aggressively to close the deal and then making adjustments elsewhere in their bid to offset the increased price they paid for the land.

Likewise, several stakeholders also identified to us a concern that in some cases the EEP excludes certain geographic areas when releasing a full delivery RFP where the EEP has already been working with property owners in these areas. The EEP excludes these geographic areas in an attempt to avoid or reduce competition between EEP and its own full delivery providers. This could put the property owner of a site reserved by the EEP, however, at a disadvantage in comparison with their neighbors who may have more flexibility in negotiating with the full delivery provider.

3. A lower than desired contract ceiling on the on-call contracts could be affecting EEP's ability to utilize the most experienced technical resources.

The EEP needs to be sure that it has access to the strongest technical resources and expertise possible for completing its design-bid-build work. The current contracting approach in which 20 firms have contracts capped at $750,000 is laudable for opening up the process to a larger number of firms. However, the contract ceiling may be affecting the EEP's ability to gain access to key technical resources. This current approach has allowed the EEP to spread the work out more uniformly. However, because the most specialized technical expertise is not necessarily uniformly distributed among all of the firms, this approach can limit the EEP's ability to obtain specialized technical expertise if a consultant's firm has reached or is about to reach its contract maximum.

4. EEP's project management staff are continuing to come up the learning curve, though there continue to be gaps in project management skills and interdisciplinary experience.

Discussions with a variety of stakeholders suggest that the EEP's project managers are continuing to grow professionally and gain experience incrementally with each project that they work on. However, there were two gaps in the knowledge of EEP staff identified by a number of different types of stakeholders:

- The extent of the project management and contract management skills of EEP Project Managers.
- The limited interdisciplinary experience and perspective of the EEP project mangers. This is typically the result of having worked in only one area such as stream design before becoming a project manager and thus having less experience about the roles and responsibilities of other team members and when to engage these team members on a project. This issue may be further exacerbated by the fact the EEP project staff do not normally perform work themselves, but instead act in a management or oversight capacity. Without having regular hands-on experience, it may be difficult for this staff to fully appreciate all of the activities being performed by the consultant staff they are supervising.

E. Organizational relationships between NCDOT, EEP and FHWA

This subsection discusses findings concerning the organizational relationship between NCDOT and the EEP and NCDOT and FHWA as it pertains to the EEP. Specifically, this section addresses the following:

- Misalignment in expectations between staff at NCDOT and the EEP concerning the relative roles and responsibilities of the two organizations.
- Delays in NCDOT submitting the initial billing to FHWA for the federal share of the cost of the EEP program.

Each of these findings is described in further detail below.

1. Misalignment in expectations between staff at NCDOT and the EEP concerning the relative roles and responsibilities of the two organizations.

While the executive management of NCDOT and NCDENR may be aligned on the relative roles and responsibilities of NCDOT and the EEP in defining the requirements for and delivering compensatory mitigation for transportation projects, there are clear organizational disconnects between individuals at the management and staff level at

NCDOT and the EEP about the role and responsibilities of the respective organizations. Some specific examples include:

- The EEP views itself as an independent entity responsible for providing permit requirements through build to order mitigation credits for NCDOT. In effect, the EEP plays the role of a contract manufacturer. A number of staff at NCDOT, on the other hand, view the EEP as simply a supplier and want to provide the same level of management oversight to the EEP as they do to engineering consultants or construction contractors.
- The current cost recovery billing methodology in which NCDOT advances the EEP funds each quarter and the EEP submits a bill at the end of the quarter reinforces this supplier relationship by providing, as is appropriate when the relationship is based on a cost recovery methodology, an extensive amount of detail concerning the EEP's operations. We were given several examples where through this detailed invoicing process NCDOT staff became aware of significant organizational changes made by the EEP that the NCDOT staff had not otherwise been informed about, such as the opening of the Asheville field office.
- There is some confusion on the part of NCDOT staff as to the point at which the EEP takes over the responsibility for and the risk of delivering the mitigation. This legal transfer of responsibility takes place at the time NCDOT identifies on its permit application that it will be using the EEP to provide the mitigation and the EEP agrees to accept this responsibility.

The tri-party MOA states that "At the time of issuance, the USACE will copy all permits or authorizations requiring utilization of the EEP program, issued to NCDOT to NCDENR EEP. Within 5 days of receipt of that permit, NCDENR will notify the USACE that NCDENR, and not the NCDOT, is responsible for providing the compensatory mitigation required by the permit, and will take all actions necessary to complete implementation of the compensatory mitigation required by such permit or authorization (p. 12), However, there is not a transfer of money and a clean "receipt" provided by the EEP to NCDOT as there is when the EEP accepts responsibility for providing mitigation for a permittee in the in-lieu fee program since NCDOT has been in effect funding the subject mitigation on an as incurred basis throughout the development process.

2. Delays in NCDOT submitting the initial billing to FHWA for the federal share of the cost of the EEP program.

The North Carolina Division Office of FHWA has been an enthusiastic supporter of EEP since its inception. As mentioned previously, the office provided a $500,000 start-up grant and has assigned a staff member as a liaison to EEP on a near full-time basis. NCDOT, as of the time of this report, however, has not yet submitted a request for federal reimbursement for the federal participating charges related to the EEP. The primary reason for this appears to be challenges that NCDOT has faced internally in

developing a methodology for allocating the costs of the EEP program to specific projects or specific divisions since the boundaries for various cataloguing units do not necessarily correspond with the boundaries for NCDOT divisions. In addition, it has required a significant effort to obtain consensus among NCDOT division engineers about this methodology.

While we recognize that NCDOT consistently receives every federal transportation dollar it is eligible for and thus has not left any money on the table because of not billing FHWA for its share of the EEP program, there is some risk in waiting too along to submit the initial bill and then addressing any business process or operational concerns that could arise through this billing process. Changes in process that might be dictated based on concerns raised by FHWA should be identified as soon as possible; as it stands, it will be now be several years following the initiation of the program before NCDOT will be seeking any reimbursement for EEP costs.

F. Programmatic Integration Between the EEP and the CWMTF

This subsection describes findings concerning the existing programmatic integration between the EEP and the CWMTF. Findings in this regard include:

- The EEP and the CWMTF have worked together in the past and continue to work together in a number of ways.
- The EEP and the CWMTF are currently implementing different strategies for site maintenance and stewardship.
- There are a number of differences in key forms used by the EEP and the CWMTF, which can lead to confusion among property owners.

Each of these items is discussed in further detail below.

1. There are a number of existing program synergies between the EEP and the CWMTF.

The EEP and the CWMTF have worked together previously on a number of initiatives. These touch points include:

- CWMTF's application for a stream restoration project requires documentation that the project has been previously submitted tothe EEP for consideration and been turned down.
- The CWMTF staff has participated on the EEP's High Quality Preservation technical team.
- The EEP EEP has bought "projects" from the CWMTF when a mitigation requirement arose in a cataloguing unit where the EEP did not have sufficient inventory but a CWMTF grantee had a project underway that could qualify for mitigation credit. Under this process, the EEP, if the CWMTF grantee is willing,

reimburses the CWMTF for the full cost of its role in the project including funds paid to the grantee and the administrative costs associated with processing the application and managing the grant.

As an example, the EEP and CWMTF have collaborated on the Trout Cove Branch restoration site, Hiwassee watershed, Clay County. The Hiwassee Watershed Coalition collaborated with EEP and CWMTF. EEP reimbursed CWMTF for CWMTF funds spent on the property. Hiwassee Watershed Coalition was awarded the funds from the reimbursement for use on new projects in the watershed. The EEP took responsibility for the management of the site and ongoing monitoring.

There are also several pending partnerships at the time of this report. EEP will only reimburse CWMTF for their expenditures on these sites if the projects prove environmentally and economically feasible. These pending partnerships include:

Exhibit V-6: Pending EEP/CWMTF Partnerships

Project	Watershed	County
Tessentee Farm	Little Tennessee	Macon
Ramah Creek	Catawba	Mecklenburg
Ripshin Branch	New	Ashe
Lewis Creek	French Broad	Henderson
Collins Tract	Dare	Pasquotank
Hanson Aggregates	Cape Fear	Chatham

- The CWMTF has partnered with NCDOT and the EEP on purchases of some of the high quality preservation lands. In terms of this process, the CWMTF has raised some concerns about the lack of visibility around how the mitigation credits from these acquisitions are being applied and whether the EEP is utilizing more mitigation credits than they should be entitled to based on the funds pooled from the different sources to complete the land acquisition. In response to this concern, the CWMTF and the EEP have suggested that in the future they would like to see these acquisitions broken into distinct parcels based on funding source. It is anticipated that this would alleviate some of the confusion around the accounting for the mitigation credits from these acquisitions.

2. The EEP and the CWMTF are currently implementing different strategies for site maintenance and stewardship.

While the CWMTF participated in the task force to define NCDENR's site maintenance and stewardship program, the Board of the CWMTF chose to initiate its own stewardship program and as of now is not participating in the NCDENR program. CWMTF implements its program by setting aside money on the front-end from the

grant application; while NCDENR has chosen to implement its program on a pay as you go basis.

3. There are a number of differences in key forms used by EEP and CWMTF, which can lead to some confusion among property owners.

Conservation easements and other documents from the two programs often have key differences. While some of these differences can clearly be attributed to differences in program scope and in some case tighter restrictions on activities that can be carried out in a conversation easement that is being used for mitigation, several stakeholders reported that these differences create confusion among property owners. From the perspective of a property owner who is doing work with both organizations, these differences are confusing since the property owner is in both cases doing business with the State of North Carolina.

G. Efficiency and Effectiveness of the CWMTF Operations

This subsection summarizes key findings concerning the effectiveness of the CWMTF operations. These findings include:

- Limited performance measurement/validation of projected benefits from the CWMTF grants.
- Minimal management systems are in place to support a program the size of the CWMTF.

Each of these items is discussed in detail below.

1. Limited performance measurement/validation of projected benefits from the CWMTF grants.

The CWMTF has no structured process for following-up on individual projects at defined intervals following implementation to evaluate the extent to which these projects met or are meeting the goals and objectives that the grantee proposed to achieve in their application. The lessons learned from these reviews could then be fed back into the grants selection process to produce improved grants applications going forward.

2. Minimal management systems are in place to support a program the size of the CWMTF.

The CWMTF has minimal management systems to support it as its program size continues to grow. This creates a risk of increased difficulty in sharing information among staff and creates the potential to create inherent inefficiencies in back room processes.

The CWMTF currently has a paper-based application process. In addition, while it has a customized server-based grants tracking system, it is only using a small part of the functionality that is available within this system. Not all staff regularly use the system or keep the information in the system up to date. In addition, the grants accounting process is being performed on stand-alone spreadsheets instead of taking advantage of capabilities that appear to be available in this in-house system.

VI. Analysis of Organizational and Programmatic Alternatives

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This section provides an analysis of several different organizational and programmatic models for providing mitigation in North Carolina and for promoting integration where appropriate between the EEP and the CWMTF. The study team analyzed the following approaches:

- The status quo in which the EEP and the CWMTF are independent programs.
- Modifications to the status quo designed to improve the efficiency of the current program environment and promote enhanced programmatic synergies between the EEP and the CWMTF.
- Merger of the EEP and the CWMTF programs.
- Returning responsibility for mitigation for transportation projects to NCDOT.
- Implementing a private mitigation banking model to the extent practical.

The initial subsection of this chapter provides an overview of the evaluation criteria utilized to analyze each proposed approach. The remaining subsections document the analysis of each proposed approach.

A. Evaluation Criteria

The study team analyzed each of the proposed organizational and programmatic alternatives based on the following criteria:

- Capability to meet various programmatic goals and objectives including:
  - Providing NCDOT with required mitigation in advance of the target construction project letting date.
  - Providing high quality mitigation to fully compensate for the impacts of transportation projects on the state's aquatic resources.
  - Supporting non-NCDOT mitigation needs currently provided for by the in-lieu fee program.
  - Supporting the nutrient offset program.
  - Meeting the CWMTF's program goals to improve the overall quality of North Carolina's aquatic resources.
- Ability to effectively address issues with North Carolina's current program approach as identified and documented in Section V above.
- Cost of implementation of the proposed alternative.

- Risks associated with implementation of the proposed alternative.
- Anticipated benefits from each alternative.
- Impact of potential future developments (i.e., federal regulations, etc.).
- Consistency with best practices and guidance.

B. The Status Quo in Which the EEP and the CWMTF Are Independent Programs

This alternative involves maintaining the status quo in which the EEP and the CWMTF are separate programs, with limited program level communication and coordination between the two organizations. Under this alternative, there are limited linkages between the EEP's watershed planning process and the CWMTF's application recruitment and selection process. Likewise, in this alternative, the EEP continues to work with NCDOT on a cost recovery basis in a modified customer-supplier relationship. Because of the nature of this alternative, there are no anticipated implementation costs. The relative advantages and disadvantages of this model are outlined below.

1. Advantages.

The advantages of the status quo alternative include the following:

- Under the current EEP program, mitigation has been removed from the critical path for the delivery of transportation projects.
- The removal of mitigation from the critical path has provided cost savings in constructing transportation projects by enabling these projects to be let on schedule versus encountering cost increases because of a delay in the letting date for a project.
- The EEP's approach to mitigation is planned and programmatic based versus the more reactive mitigation approach under a project-specific mitigation model.
- This programmatic approach provides the potential for higher quality mitigation and improved environmental outcomes through a watershed-based planning approach to mitigation.
- Under this alternative, mitigation is implemented by an environmental agency instead of a transportation agency.
- NCDOT is able to better focus on its core mission of planning, designing, building, and maintaining transportation infrastructure versus having to develop expertise in the design, implementation and on-going stewardship of compensatory mitigation.
- There is extensive buy-in by the environmental resource agencies and other environmental stakeholders for the current approach in which the EEP is housed within NCDENR.

- There is also extensive buy-in by environmental stakeholders to the separate organizational structures for the EEP and the CWMTF, with a clear separation of responsibilities between the EEP's compensatory mitigation program and the CWMTF's broader voluntary grant-based program.

2. Disadvantages.

The disadvantages of the status quo alternative are as follows:

- The current structure of the EEP MOA provides limited flexibility to apply credits outside of an eight-digit cataloguing unit.
- NCDOT perceives that it has limited control over the cost of mitigation, something that is a significant expense item within its transportation project delivery process.
- There is some concern over the effectiveness of the existing watershed-based planning process given that there is not always an apparent linkage between site selection and the outcomes of the watershed planning process, especially in the case of the EEP's full delivery projects.
- There are limited linkages between the EEP's watershed planning process, DWQ's basin-wide planning process, and the CWMTF's application and grantee selection processes.
- There is a surplus of mitigation in some cataloguing units; this leads to concerns by some policy-makers about the cost effectiveness of the current approach.

C. Modifications to the Status Quo Designed to Improve the Efficiency of the Current Environment and Promote Enhanced Programmatic Synergies Between the EEP and the CWMTF

This alternative would maintain the EEP and the CWMTF as separate programs and independent organizations. However, a number of steps would be taken to improve cross-program coordination and drive programmatic linkages. Likewise, additional steps would be taken to strengthen the partnership between NCDOT and the EEP. This alternative would include the following process improvements:

- Negotiating additional flexibility into the MOA to allow the use of available mitigation credits within a river basin in situations where there are not sufficient credits in a specific cataloguing unit but there is an anticipated surplus of credits elsewhere in the same river basin.
- Negotiating a 1:1 ratio at the time of permit issuance where there is mitigation that is in the ground and deemed to be fully functional at the time of impact. Additional feet or acres may be then applied to other permitted projects with similar mitigation needs (e.g. site and kind). Over time, this will reduce the amount of mitigation that must be

implemented and substantially reduce the cost to the state of implementing compensatory mitigation.

- Establishing procedures to ensure that the EEP is involved in any potential acquisition of environmentally sensitive land by the state in order to utilize mitigation dollars as the first source of funding for any acquisitions by the state in an area where there is a need for mitigation credits and the property being acquired would be eligible for mitigation credits.
- Modifying the CWMTF's enabling legislation to provide the flexibility to use CWMTF grant funds for compensatory mitigation in some situations.
- Partnering with the CWMTF to help state or local governments or land trusts acquire any property identified by the EEP and NCDOT as surplus and a candidate to be divested.
- More effectively integrating the EEP's watershed planning process with the river basin planning process currently performed by DWQ. One alternative for accomplishing this would be by creating a joint planning group that addresses the planning needs of both organizations.
- Enhancing the watershed planning process to develop a concrete set of recommended projects to address the needs identified in the plan and to share the needs identified and the proposed projects to address these needs in the watershed plans with mitigation providers and potential CWMTF grantees.
- Involving the CWMTF in the watershed planning process and in the definition of this list of proposed projects; CWMTF would then "market" these potential projects to prospective grantees as suggested or recommended projects to be considered for submission.
- Modifying the CWMTF grant selection process to provide additional weight through substantial bonus points to prospective grantees who are proposing to address high priority needs and/or targeted projects as identified in the watershed plans.
- Increasing the emphasis on functional mitigation versus the traditional acres and feet approach and leveraging the watershed plans to implement this strategy.
- Working with regulators to establish multiple out-of-the-box mitigation pilots and tightly linking these programs to the high priority projects identified in the watershed plans.
- Implementation of a two-stage Transportation Improvement Program (TIP) including a development component that would include projects in the planning and initial design stages and a delivery component for projects in final design, letting preparation, and construction.
- Migrating from the current advanced mitigation approach to a "just-in-time" mitigation approach in which NCDOT would order mitigation from the EEP at the time it programs a project into its delivery TIP. The EEP would use information in the development TIP to target site selection activities but would not acquire an option on a

parcel or begin design activities until the project is programmed by NCDOT for construction.

- Transitioning to a per credit based fee approach for NCDOT to acquire mitigation from the EEP as the current build-out phase of the EEP program levels out.

The estimated cost of implementing this alternative is in the range of $400,000 - $500,000. This cost estimate includes:

- Any contracted assistance that may be required to design and implement an approach to more closely align the river basin and watershed planning processes and link the watershed planning process with the CWMTF grant application and selection process.
- Any support required to implement changes in processes and procedures based on additional flexibility in the MOA.
- Consulting support required to implement the two-staged TIP and manage the determination of surplus property and the sale of these parcels.

This alternative should not result in additional operational costs to DWQ and/or USACE as the EEP program would continue to act as a single point-of-contact for the regulatory community.

While we have not specifically quantified the benefits from this alternative, it is anticipated that the benefits would more than offset the costs of implementing this alternative. Anticipated benefits would include:

- Reduced costs for delivering mitigation through greater flexibility within the MOA to apply surplus mitigation within a river basin.
- Reduced costs for developing mitigation through the application of lower ratios for mitigation that is fully functional at the time of permit issuance.
- Reduced costs for developing mitigation going forward through improved forecasting of mitigation requirements.
- Potential revenue for NCDOT from the transfer of surplus EEP assets to other organizations through a partnership with the CWMTF.
- Improved environmental outcomes through more effective targeting of traditional in-kind mitigation, functional mitigation and out-of-the-box mitigation by tighter linkages to watershed planning.

The relative advantages and disadvantages of this model are outlined below.

1. Advantages.

Advantages of the modified status quo model include:

- Mitigation would remain off the critical path for the delivery of transportation projects.

- The overall cost of delivering mitigation would be reduced through additional flexibility to utilize surplus credits in one cataloguing unit in another cataloguing unit within the same river basin.
- The state would have additional flexibility in terms of acquiring mitigation through existing funding sources by having the option of utilizing CWMTF projects which meet or could meet the criteria for eligibility for mitigation credit.
- The cost of mitigation would also be reduced by the agreement of the MOA signatories to apply lower mitigation ratios at the time of permit issuance where mitigation is in the ground and fully functional in advance of the start of construction of the transportation project.
- The mitigation deployed under this model would be programmatic in nature and would be much more tightly integrated with the watershed planning process.
- The watershed planning process would be more fully aligned and integrated with DWQ's basin-wide planning process and CWMTF's grants application and selection process.
- The value received from the basin-wide and watershed planning processes would increase as these planning processes are used to help define and guide functional mitigation and out-of-the-box mitigation programs. Implementation of non-traditional mitigation approaches will also provide additional opportunities for the EEP and the CWMTF to partner in delivering projects, with the potential for significant environmental outcomes.
- The legal transfer of responsibility for mitigation from NCDOT to EEP will be more clear through the payment of a per-credit fee in which NCDOT would essentially receive a receipt for its payment similar to that obtained by customers of the in-lieu fee program today.
- The forecast of future mitigation requirements will improve through the implementation of a two-step transportation delivery program. Under this two-step program, projects are only programmed for final design and construction after enough design has been done to fully understand the scope of the project; define the project's mitigation requirements; estimate with improved precision the anticipated costs to develop the project including construction, right-of-way, mitigation and other costs; and identify the risks to successful delivery of the project.

2. Disadvantages.

Disadvantages of this modified status-quo alternative include the following:

- Re-negotiation of key aspects of the existing EEP MOA will be required. It is anticipated that this renegotiation will require significant involvement from senior executives (most likely at the Secretary level) of NCDOT and NCDENR and the Colonel of the Wilmington District of USACE.

- The transition from an advanced mitigation model to a just-in-time delivery model for mitigation introduces some risk that a project could be delayed because mitigation is not available. This approach will require tighter management and monitoring by the EEP of its project delivery process. This risk should be offset somewhat by the experience the EEP and its delivery partners are beginning to gain. This additional experience should help to make the EEP's project delivery schedules more predictable as the program matures.
- The transition from the current cost recovery approach to a per-credit fee would have to be carefully staged and managed to reduce unintended financial impacts to either NCDOT or the EEP. It is believed that this transition can take effect as the EEP program moves from its build-out phase to a more constant annual level of work in the future.
- Negotiation of ratios, flexibility of mitigation "site" and "kind," and advance mitigation could result in a temporal and spatial loss of aquatic resource function within affected watersheds.
- Measuring the functions and values of functional replacement and "out of the box" mitigation (as opposed to easily quantified replacement of acres and feet) presently remains a difficult and imprecise task and may pose a tough sell with regulatory agencies.
- Any modification of the CWMTF's current prohibition on participating in compensatory modification is likely to face opposition from environmental advocacy groups and potentially from current or former CWMTF grantees. These organizations would be concerned that removal of the CWMTF's prohibition on participating in compensatory mitigation would cause the CWMTF to select projects which would be eligible for mitigation credit at the expense of other types of projects. These organizations would also be concerned that the net impact would be less total dollars spent on environmental projects in North Carolina annually.

D. Merger of the CWMTF and the EEP

This alternative involves the organizational merger of the CWMTF and the EEP programs. For purposes of our analysis, we assumed that this merger would involve the integration of the EEP program within the CWMTF organization. While the EEP currently has significantly more employees than the CWMTF, our rationale for merging the EEP into the CWMTF was based on the benefits of providing programmatic oversight and accountability through an independent board. Such a merger would facilitate definition and implementation of a number of potential programmatic synergies such as a tighter linkage of the CWMTF application process to the EEP watershed plans and additional partnering between the EEP and the CWMTF on functional replacement and out-of-the-box mitigation strategies.

This alternative would have a number of risks and challenges associated with it. First, it would require some modification of the enabling legislation for the CWMTF to establish the merger of the organization and to clearly define the two distinct responsibilities of the

merged organization: (1) compensatory mitigation and (2) management of voluntary grant based programs to enhance and preserve the quality of aquatic resources in North Carolina. Second, a number of policies and procedures would need to be adjusted to reflect merging the EEP program, which is currently an administrative program within NCDENR, to be under the direction of the CWMTF board. Third, it would also require substantial education of the stakeholder community and the customers of both of the current programs on the benefits of the merger. Fourth, it would require modifications to the MOA to recognize the merged organization. Finally, steps would be required to ensure that the current program objectives of the CWMTF are preserved and protected as the merged organization also begins to focus on compensatory mitigation.

The estimated one-time implementation costs for executing this alternative are in the range of $200,000 - $300,000. This would include consolidation and relocation of staff, development of revised policies and procedures for the merged organization, negotiations on the modification of the MOA, and a communication program for EEP and CWMTF customers and other stakeholders in the environmental and transportation communities.

This alternative should not result in additional costs to DWQ and/or USACE as the EEP program within the merged organization would continue to act as a single point-of-contact for the regulatory community.

The relative advantages and disadvantages of this alternative are outlined below.

1. Advantages.

The anticipated advantages of the merger of the EEP and the CWMTF include:

- The EEP and the CWMTF are both environmental agencies. As such, they have similar high-level organizational goals and missions with respect to environmental outcomes.
- A consolidated organization will allow for easier achievement of programmatic synergies between the EEP and the CWMTF.
- There is the potential for improved environmental outcomes by pooling resources between the two programs.
- There is an opportunity in a consolidated organization to more closely link the CWMTF grant programs with the needs and goals identified by the watershed planning process.
- There is some potential for administrative efficiencies if the two organizations are merged; however, these efficiencies are not likely to be too significant since both organizations already rely on NCDENR for functions such as accounting, finance, and human resource management.

2. Disadvantages.

Disadvantages of the merger of the EEP and the CWMTF include:

- The EEP and the CWMTF have different delivery approaches (i.e., designer/implementer vs. grantor).
- There is limited enthusiasm among the regulatory community for a merger based on concerns over commingling funding between the EEP's compensatory mitigation program that is based on a clearly defined and strict regulatory framework and the more flexible, voluntary CWMTF program. These regulatory concerns could create difficulty in negotiating any changes to the MOA necessary to implement the consolidation of the two programs.
- There is a potential for subsidizing NCDOT mitigation with CWMTF dollars, which is not currently the legislative intent of the CWMTF program.
- Stakeholders have concerns about how the divergent governance of the two programs will be integrated post-merger.
- The CWMTF customers have concerns about unintended negative impacts to the current CWMTF program because of the impact of integrating the EEP's compensatory mitigation program.

E. Returning Responsibility for Mitigation for Transportation Projects to NCDOT

This alternative involves the transfer of responsibility for mitigation associated with transportation projects back to NCDOT. An EEP-like organization would likely remain in place to provide an in-lieu fee program, as well as to manage the nutrient program.

This alternative would be similar to the way mitigation was performed prior to the start of the EEP. NCDOT would have complete responsibility for conducting mitigation and would likely negotiate the mitigation on a project-by-project basis as part of the permitting process. Under this scenario, NCDOT would seek to provide advanced mitigation to the extent possible. To accomplish this would require improved forecasting of both project delivery schedules and mitigation requirements for each project.

NCDOT would likely provide mitigation through a combination of approaches. This would include on-site, project specific mitigation; the use of advanced mitigation developed through both design-bid-build and full delivery approaches; the development of their own mitigation banks; and the use of private mitigation banks.

The implementation of this alternative would require the transfer of environment specialist staff between EEP and NCDOT. The cost to implement this alternative including shifting of resources, adjustment of policies and procedures and other steps is estimated to be in the range of $250,000 to $300,000.

This alternative could also result in additional costs to DWQ and/or USACE as coordination would be required by these regulatory agencies with various NCDOT staff and potentially some mitigation bankers whereas the EEP program today acts as a single point-of-contact for the regulatory community.

The relative advantages and disadvantages of this alternative are outlined below.

1. Advantages.

The anticipated advantages of returning the responsibility for mitigation to NCDOT include:

- NCDOT would have direct control over mitigation expenses.
- NCDOT would have clear accountability for the timely delivery of mitigation, as well as full responsibility for managing the costs associated with delivering this mitigation.
- There would potentially be more flexibility in applying mitigation outside the impacted cataloguing unit than is currently possible under the EEP MOA through project level negotiation of issues between NCDOT staff and DWQ and USACE regulatory staff.

2. Disadvantages.

Disadvantages of returning the responsibility for mitigation to NCDOT include:

- Abandoning the EEP model and returning responsibility to NCDOT would be a difficult sell with environmental resource agencies that prefer NCDENR as an environmental agency having responsibility for mitigation program delivery.
- There is substantial risk of mitigation again becoming project focused and reactive versus the current programmatic approach. This could potentially result in a reduction in mitigation quality.
- There is a significant risk of putting mitigation back on the project delivery critical path.
- Some form of an EEP-like organization will still be needed to support the in-lieu fee and nutrient programs.

F. Implementing a Private Mitigation Banking Model to the Extent Practical

This alternative involves the implementation of a private mitigation banking model to meet NCDOT's needs for compensatory mitigation. This mitigation banking model would also likely address some private sector mitigation needs to the extent practical.

It is envisioned that mitigation banks would be appropriate in some watersheds where market demands are sufficient to make more than one bank commercially viable. Other watersheds, however, may not be commercially viable for private mitigation banks and/or might only have one bank enter the market. In these situations, NCDOT, as is the case in Virginia and Georgia, would have to either act as the "bank of last resort" or utilize on-site, project specific mitigation.

Under this alternative, an EEP-like organization would also likely be maintained, with an in-lieu fee program to meet the needs of the private sector that cannot be met by a bank due to either the small size of the need and/or the lack of a viable bank in the impacted cataloguing unit. This EEP-like organization would also likely continue to manage the nutrient offset program. EEP could also maintain responsibility for watershed planning though it is not clear exactly if or how these watershed plans could be effectively linked to the site selection of private mitigation banks. As an alternative, watershed planning could be folded into the DWQ unit that currently performs basin level planning.

A key criterion to successfully implementing a mitigation banking program would be some flexibility in the definition of the service areas for a mitigation bank. Defining the river basin versus the cataloguing unit as the service area for a mitigation bank, for example, would likely reduce some of the current barriers to entry for private mitigation bankers in North Carolina and improve the overall business case for investing in developing a mitigation bank in North Carolina.

The EEP program would continue as currently structured during a transition period of three to five years as mitigation banks come on-line in various watersheds, with responsibility for any gaps in service transitioned to NCDOT. The cost to the state of implementing a mitigation banking program is estimated to be in the range of $150,000 to $200,000, with the primary cost being development and on-going management of the transition plan including the shifting of some resources from the EEP to NCDOT to oversee the transportation mitigation program.

It is estimated that the adoption of a private mitigation banking alternative would result in a net reduction in headcount of approximately 30 staff. Some of the existing staff would be shifted to NCDOT and others to DWQ's basin-wide planning function, with some staff remaining within the EEP to manage delivery of the in-lieu fee and nutrient programs. The estimated cost savings from this alternative would be approximately $2,250,000 (based on an average fully loaded salary of $75,000 per employee).

This alternative would likely result in additional operational costs to DWQ and/or USACE as additional staff could be required to coordinate with multiple mitigation bankers and NCDOT versus the EEP program acting as a single point-of-contact for the regulatory community.

The relative advantages and disadvantages of this alternative are outlined below.

1. Advantages.

Anticipated advantages of a mitigation banking alternative include:

- There is the potential for improved accountability by tying responsibility for timely delivery and quality of mitigation to the payment of banking fees.
- Competition between mitigation bankers could lead to cost reductions in some watersheds.

2. Disadvantages.

Disadvantages of a mitigation banking alternative include:

- There is limited enthusiasm for the private mitigation banking model among regulators who have achieved operational efficiencies of their own under the EEP model by having the EEP as a single point of contact for mitigation issues.
- There are concerns among environmental stakeholders about how much emphasis would be placed on watershed planning under a mitigation banking model.
- Private mitigation banks would not be commercially viable in all watersheds, thus requiring NCDOT to develop its own mitigation banks or on-site mitigation and/or to utilize a scaled-down EEP program to provide this mitigation.
- There is a potential for an increase in the cost of mitigation in some watersheds where only one bank enters the market and/or where NCDOT or a scaled-down EEP must act as the bank of last resort.
- An EEP-like organization would still be required to provide some functions (i.e., the in-lieu fee program for watersheds where mitigation banks do not become viable and the nutrient program).

VII. Recommendations

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This section outlines a number of recommendations based on the findings documented earlier in this report and the results of the analysis of various organizational and programmatic alternatives. This includes recommendations concerning the organizational and programmatic relationships between the EEP and the CWMTF, steps to strengthen the relationships between the EEP and NCDOT and specific policy changes, process improvements, and technology recommendations for both the EEP and the CWMTF.

For ease of presentation, our findings have been organized into the following subsections:

- Organizational structure.
- Surplus management.
- NCDOT/EEP partnership.
- Watershed planning.
- Functional mitigation and out-of-the-box mitigation.
- Private mitigation banking.
- EEP project delivery processes.
- CWMTF operations.
- Other recommendations.

A. Organizational Structure

This subsection presents our recommendations concerning the organizational structure of EEP and CWMTF. Our recommendations in this regard include:

- The EEP and the CWMTF should remain separate organizations.
- An acquisition review process should be established which actively involves EEP in reviewing each acquisition to assess the applicability of utilizing any proposed state land acquisition for mitigation credit.
- The General Assembly should consider removing the prohibition on CWMTF participating in compensatory mitigation.
- Additional effort should be made to leverage programmatic synergies between the EEP and the CWMTF.

These recommendations are outlined in further detail below.

1. The EEP and the CWMTF should remain separate organizations.

Our analysis suggests that there are limited benefits to merging the EEP and the CWMTF. While both agencies are focused on creating positive environmental outcomes, the EEP is responsible for delivering a compensatory mitigation program based in a fairly structured regulatory environment. The CWMTF, on the other hand, is responsible for managing a voluntary program with a substantially larger scope. Likewise, while the EEP is a delivery organization who manages the restoration of streams and wetlands, the CWMTF is a grantor agency that provides funding to other organizations that actually design and implement projects.

Similarly, there would be significant risk in terms of stakeholder buy-in and cultural change between the two organizations. The regulatory agencies who work with the EEP (DWQ and USACE) have expressed concerns about mixing compensatory mitigation with the CWMTF's voluntary program. These concerns represent a risk to implementing the merger because it would likely require modifications to the MOA to establish the merged organization.

At the same time, the CWMTF grantees whom we interviewed for this study expressed concerns about the CWMTF's core mission being affected by the integration of a compensatory mitigation program. In addition, there are a number of organizational change issues that would need to be addressed in terms of merging an agency with an independent board (CWMTF) with an agency that operates as an administrative unit with NCDENR (EEP).

2. An acquisition review process should be established which actively involves EEP in reviewing each acquisition to assess the applicability of utilizing any proposed state land acquisition for mitigation credit.

DENR should take the lead in establishing an acquisition review procedure that actively involves EEP in order to ensure that the EEP is engaged in all state land acquisitions. This will allow mitigation dollars to always be utilized as the first source of funding for any acquisitions by the state in an area where there is a need for mitigation credits and the property being acquired would be eligible for mitigation credits.

3. The General Assembly should consider removing the prohibition on CWMTF participating in compensatory mitigation.

In addition, the General Assembly should consider removing the prohibition on the CWMTF participating in compensatory mitigation. Having the option to utilize CWMTF monies for compensatory mitigation would provide the state additional flexibility and provide the potential to better leverage the state's scare financial resources. It also may allow the CWMTF and the EEP to work together more effectively in the future on land acquisitions, functional mitigation and out-of-the-box mitigation initiatives.

The elimination of the prohibition on the CWMTF participating in compensatory mitigation must be carefully balanced so as to not unduly impact the existing voluntary grants based program and/or to unfairly weigh the selection of projects in any way towards projects which are candidates for mitigation credit. To minimize the impact to the existing CWMTF program through removal of the prohibition on compensatory mitigation, it is suggested that the statue be modified to allow EEP to utilize for mitigation credit projects selected through the normal CWMTF application selection process that are determined to be eligible for mitigation credit and in a cataloguing unit where mitigation is needed. Projects would not be given additional consideration or any "bonus points" in the CWMTF grant selection process for their value as a mitigation site.

In situations where the EEP identifies that a CWMTF project could be utilized as a mitigation site, the EEP would be responsible for paying any incremental costs for the project associated with making the site meet regulatory requirements as a mitigation site. This represents a change from the current situation where the EEP buys the project from CWMTF, fully reimbursing the CWMTF for any costs incurred by the CWMTF related to the project and then takes over responsibility for completing the project and monitoring the site. This approach represents a savings to the state in that the EEP would fund only the additional incremental versus paying for the full cost of the project.

It is important to understand that not all preservation or restoration projects funded by the CWMTF would likely be eligible for mitigation credit. Currently, CWMTF projects are entirely developed as the result of applications being submitted by interested parties. While these projects are designed to achieve specific environmental outcomes, they are not always performed within the tight regulatory standards and specifications that are required of mitigation projects.

Mitigation required for permitted impacts to aquatic resources must follow a set of regulatory requirements that are prescribed at the time of permit issuance. In addition to meeting project requirements for mitigation method, size, location, design, and permanent protection, permittees must also:

- Monitor and periodically report on the performance, or "success" of a project in meeting ecological goals and criteria. Performance criteria are often expressed as "performance standards" that measure ecological functions or physical properties, e.g., attainment of the appropriate wetland hydrology, percent coverage of appropriate vegetation, and/or percent species composition. Permittees are typically required to report annually for a set period of time, e.g., five years (although requirements will vary depending on the project).
- Provide contingency funds as assurance in the event of project failure, which may require repair or remediation in order to meet prescribed performance standards.
- Provide for long-term management and maintenance of the mitigation project (i.e., beyond the reporting period). This entails ensuring the long-term

performance of mitigation sites by identifying an entity (e.g., a land trust or state agency) that will be responsible for providing maintenance services and by providing funds to cover costs associated with long-term maintenance services and/or contingency/remediation funds.

Likewise, any modification of the CWMTF's current prohibition on participating in compensatory mitigation is likely to face opposition from environmental advocacy groups and potentially from current or former CWMTF grantees. These organizations would be concerned that removal of the CWMTF's prohibition on participating in compensatory mitigation would cause the CWMTF to select projects which would be eligible for mitigation credit at the expense of other types of projects. These organizations would also be concerned that the net impact would be less total dollars spent on environmental projects in North Carolina annually.

An example of how this recommendation would work is presented below.

Example:

CWMTF awards a $500,000 grant to a land trust to perform a stream restoration project. During the project, EEP identifies a need for stream restoration credit in the same cataloguing unit where the land trust is performing the project under the CWMTF grant.

Current situation: With the grantees concurrence, the EEP buys the project from the CWMTF. The EEP refunds the CWMTF $500,000 plus CWMTF's administrative costs.

Recommended approach: The EEP would be responsible for any incremental costs associated with the restoration site. This would include cost of monitoring for five years per regulatory requirements and any other site-specific costs.

4. Additional effort should be made to leverage programmatic synergies between the EEP and the CWMTF.

While we do not recommend an actual merger of the two organizations, we believe that there are a number of programmatic synergies between the EEP and the CWMTF that should be aggressively pursued. Our recommendation represents an adaptation of the status quo model with programmatic synergies and process improvements outlined in Section VI.C. These programmatic synergies include:

- Linking the two organizations more closely through tighter integration of the EEP's watershed planning process with the CWMTF's grant application and selection process (please refer to Section VII.D.3). We envision this to include an active marketing of priority projects identified in an enhanced watershed planning process to potential CWMTF grantees in order to encourage these priority projects to be pursued. This recommendation would also involve a revision of the CWMTF application scoring process to award substantial bonus

points for grantees proposing either to implement a priority project identified in the watershed plans or to otherwise address a high priority need identified in a watershed plan.

- Developing a partnership between EEP and CWMTF to provide a mechanism to help other state agencies, local governments, or land trusts acquire EEP mitigation lands that may be declared as surplus (please refer to Section VII.B.4).
- Developing a partnership between EEP and CWMTF to jointly pursue functional replacement projects and a pilot of an out-of-the-box mitigation project (please refer to Section VII.E.2).

B. Surplus Management

This subsection presents our recommendations concerning the steps required to manage the current surplus of mitigation credits in some watersheds. Specifically, we recommend the following actions:

- Negotiate flexibility to utilize existing credits within different cataloguing units in the same river basin.
- Modify the MOA to incorporate a statement of direction that mitigation ratios will be reduced at the time of permit issuance in appropriate situations where mitigation is in the ground and functional.
- Identify the surplus credits and create an action plan for each parcel identified as surplus.
- Develop a partnership between the EEP and the CWMTF to facilitate acquisition of surplus properties.

Each of these recommendations is discussed in further detail below.

1. Negotiate flexibility to utilize existing credits within different cataloguing units in the same river basin.

NCDOT and NCDENR, as the state's two agency partners in the MOA, should work with USACE to negotiate changes to the MOA to provide for the flexibility to utilize credits in one cataloguing unit that have been determined to likely be surplus in other cataloguing units in the same river basin where there is a need for credits. This application of surplus credits, when available, should always be a prerequisite to constructing or acquiring new credits.

We believe such a modification to the MOA would be consistent with the experience we found in our surveys of practices in other states with a strong preference for having mitigation in the same watershed/cataloguing unit, but the regulator has flexibility to address situations on a case-by-case basis. In these other states, we found that mitigation is still placed in the same cataloguing unit as the impact the vast majority of

the time. We believe this would still be the case at the overall program level in North Carolina, even with the establishment of this additional flexibility for addressing the surplus mitigation.

This recommended strategy provides an essential element of flexibility to allow the three partners in the MOA to apply a level of cost containment, with minimal impact to the EEP's overall environmental stewardship goals. However, it should be noted that this approach contains some added risk for the state since regulatory staff indicate that this flexibility may also affect timely permitting if, at the time of the proposed impact, mitigation is evaluated as not meeting regulatory requirements.

The EEP staff has developed similar proposals to this recommendation in the past but there has been limited follow-up by executive management. We believe this recommendation is crucial and that it will require active involvement at the executive level at NCDENR and NCDOT in order to work with the USACE to affect its implementation. We would strongly recommend that the Secretary of NCDENR and the Secretary of NCDOT meet to agree on language that is acceptable to the two state agency partners and then personally meet with the Colonel of the Wilmington district of USACE to negotiate this item.

2. Modify the MOA to incorporate a statement of direction that mitigation ratios will be reduced in appropriate situations where mitigation is in the ground and functional.

During the course of this study, informal discussions with regulators suggested that in many situations they would likely be comfortable in reducing mitigation ratios (to either 1:1 or closer to 1:1) based on the advance mitigation actually being in the ground and functioning at the time of permit issuance. Such a strategy would present an opportunity to significantly reduce the amount of mitigation that would have to be developed and acquired in the future and consequently reduce the overall cost of providing mitigation for transportation projects on a go-forward basis.

We would recommend that as an extension of the negotiation on additional flexibility in the MOA for surplus credits that NCDENR and NCDOT also seek agreement from USACE to modify the MOA to stipulate that it is the stated intention of the three parties to the MOA that mitigation ratios will be reduced to 1:1 when the mitigation is in the ground and functioning, with some discretion for the regulator to apply this directive on a case by case basis at the time of the permit.

Codifying this directional statement in the MOA now versus just implementing this direction at some point in the future is critical. Having this as a statement of direction now will allow the EEP to build this assumption into its business planning. This will likely result in the EEP needing to develop less mitigation in future years, thus reducing the total cost of mitigation in North Carolina. If instead these ratios are just changed at some point in the future, it is quite likely that more mitigation will be

constructed now and in the next five to eight years than is actually needed, in effect adding to the surplus of mitigation.

3. Identify surplus credits and create an action plan for each parcel identified as surplus.

The EEP and NCDOT should work together to identify and designate actual surplus credits based on a review of the best available information from the TIP and other resources on when/if various projects may be constructed. In conducting this analysis, we recommend the following steps:

- NCDOT should carefully review and assess the projects in the TIP and adjust the proposed timing and amount of mitigation required. Any projects that NCDOT anticipates will not actually be built and/or built within a reasonable time frame (for example, eight years) should be removed from the analysis.
- The EEP should update their operational plan and forecast of mitigation requirements based on the updated NCDOT analysis and the anticipated impact of the recommendations above on additional flexibility for using surplus credits and the reduction in ratios for mitigation that is in the ground and functioning.
- As part of analyzing the surplus, the EEP should then consider the anticipated forecast of needs for the in lieu fee program for the next three years in each cataloguing unit and any opportunities to apply NCDOT surplus mitigation to the anticipated in lieu fee needs should be taken into consideration as part of identifying what property is actually surplus. This market forecast should be based on anticipated growth and development in each cataloguing unit and the historical orders that have been placed for mitigation in each cataloguing unit.
- The EEP should then look at existing properties to identify cases where, while the property is being used for mitigation and/or it is anticipated to be needed in the future there may be surplus parcels within the property (i.e., parcels where uplands were acquired as part of an acquisition of a property for stream restoration, etc.). While it may be appropriate to retain some of these uplands as buffers, it is believed that a number of parcels may be candidates to be identified as surplus. To complete this step will likely require detailed analysis of individual properties, including site visits.
- NCDOT and EEP should explore opportunities to sell high-quality preservation lands to the in-lieu fee program.
- The EEP should then develop a list of properties (surplus mitigation or excess parcels) that appears to be surplus for final review by the existing interagency team chartered to look at this issue. In preparing this list, EEP should identify any properties where there are special issues that will need to be considered. For example, the Croatian Banks site is a mitigation bank, so proposed decisions on this site will need to be negotiated with the Mitigation Banking Review Team and changes made to the banking instrument as required.

- The interagency team should then make a specific recommendation on each property on the list for action by NCDENR and NCDOT executive management. In making this final recommendation, it is important that the team consider whether each "surplus" property is in the best interest of the state for the property to be sold. If there is a chance that a transportation project requiring mitigation would be built in the next 10 to 15 years in a given area, careful consideration should be given to disposing of the asset. In the future, it may be very difficult to procure the same kind of acres and feet again, and the cost of acquiring and developing the mitigation in the future will likely be substantially higher than what was either originally paid for the property or its selling price. The opportunity to obtain some immediate term revenue should be carefully weighed against the cost of obtaining the same mitigation at some point in the future.

The EEP has had an interagency team addressing this surplus issue for some time. The work of this group as outlined in this recommendation needs to be moved to completion. Again, we would expect that the completion of this recommendation will require direct involvement by the Secretary of NCDENR and the Secretary of NCDOT, and we would urge that the secretaries and their senior staff engage on this issue and drive it to closure by the end of calendar year 2007.

4. Develop a partnership between the EEP and the CWMTF to facilitate acquisition of the surplus properties.

The CWMTF should partner with the EEP and NCDOT to create a program to allow other state agencies, local governments and land trusts to purchase "surplus" mitigation property. Such a program would provide a win/win situation by preserving these mitigation lands for use for environmentally sensitive purposes, while at the same time returning some funds back to NCDOT in the near-term for use in funding transportation projects. In some situations, as part of the sale, it may be appropriate to stipulate that the land trust or acquiring agency be asked to agree to give EEP an option to purchase the entire property back or potentially a conservation easement within the parcel at fair market value if it is needed in the future for compensatory mitigation. If the EEP actually exercises this option, it would essentially be buying the CWMTF out of the project as it has done in similar situations in the past.

To implement this recommendation, the following steps would be required:

- As part of the appropriation process, the General Assembly would need to stipulate that a set percentage of the CWMTF's grant funds (a minimum of 15% to a maximum of 20% is suggested) be utilized to allow eligible grantees to acquire mitigation land declared to be surplus by the EEP and NCDOT.
- The General Assembly would also need to specifically stipulate that the funds raised through the sale of this property would be transferred to the Highway Fund versus being placed into the General Fund.

C. NCDOT/EEP Partnership

This subsection presents our recommendations for strengthening the partnership between the EEP and NCDOT. These recommendations include:

- Improve the quality of the demand forecast for mitigation by implementing a two-phased Transportation Improvement Program (TIP).
- Shift from advanced mitigation to a just-in-time mitigation approach.
- Transition from an expense reimbursement methodology to a per credit fee basis.
- Initiation by NCDOT of regular billing of FHWA for the federal share of the cost of the EEP.
- Development by the EEP of a more effective management scorecard and strengthening of the EEP's overall communication outreach.

Each of these recommendations is discussed in further detail below.

1. Improve the quality of the demand forecast for mitigation by implementing a two-phased Transportation Improvement Program (TIP).

The study team recommends that NCDOT improve the quality of the demand forecast for mitigation by implementing a two-phase TIP consisting of:

- A development TIP, that contains projects that are in the feasibility study, environmental planning, and preliminary design stages of the project delivery life cycle.
- A delivery TIP consisting of projects that are in final design, letting preparation and the construction phases of the project delivery life cycle.

This two-phased TIP would require a proactive decision point prior to programming the project for construction (i.e., adding it to the delivery TIP). This decision point would require a review of project scope, an analysis of project costs including the cost of providing mitigation, and an assessment of project risk. An affirmative decision would then be required by a multi-disciplinary senior management team, after reviewing these factors to program the project for construction and to target a proposed letting date (based on both the expected availability of funding and the anticipated time required to complete design). Concurrence on this recommendation by the Board of Transportation would also be required.

The objective of the recommendation is to change NCDOT's current project delivery process so that NCDOT does not commit to delivery timelines, costs, and scope until a higher level of project development has been completed. The recommendation establishes a development component of the TIP that involves more planning and environmental screening. This process change would not advance projects into the

delivery TIP until there was agreement on the likely environmental conditions to be addressed and the mitigation and design approach to address them. The intent of the recommendation is to establish the delivery TIP as a multi-year (perhaps five-year), financially feasible project delivery plan. The plan would be annually updated and provide the delivery commitment that NCDOT and elements of the state resource agencies' performance is managed against. Once projects are in the delivery TIP, their scope, schedule, and budget would be very carefully managed and controlled.

The adoption of a two-phased TIP would substantially improve the demand forecast for mitigation by allowing NCDOT to place its order for mitigation only for projects it really intends to build because it has a solid understanding of the costs, the planned timeline for completing and letting the project, and defined funding sources. Also, because the forecast is being provided later in the project process, the estimate of required mitigation will be more precise and should take into consideration adjustments made through the Merger 01 process.

In addition to the benefits in terms of improving the forecast for mitigation, a two-phased TIP provides a tremendous amount of other benefits to NCDOT in terms of focusing department efforts on those projects that are ready to be built (those in the delivery TIP), weeding out marginal projects through the positive checkpoint to program the project for construction, and generally increasing the predictability of the project delivery process.

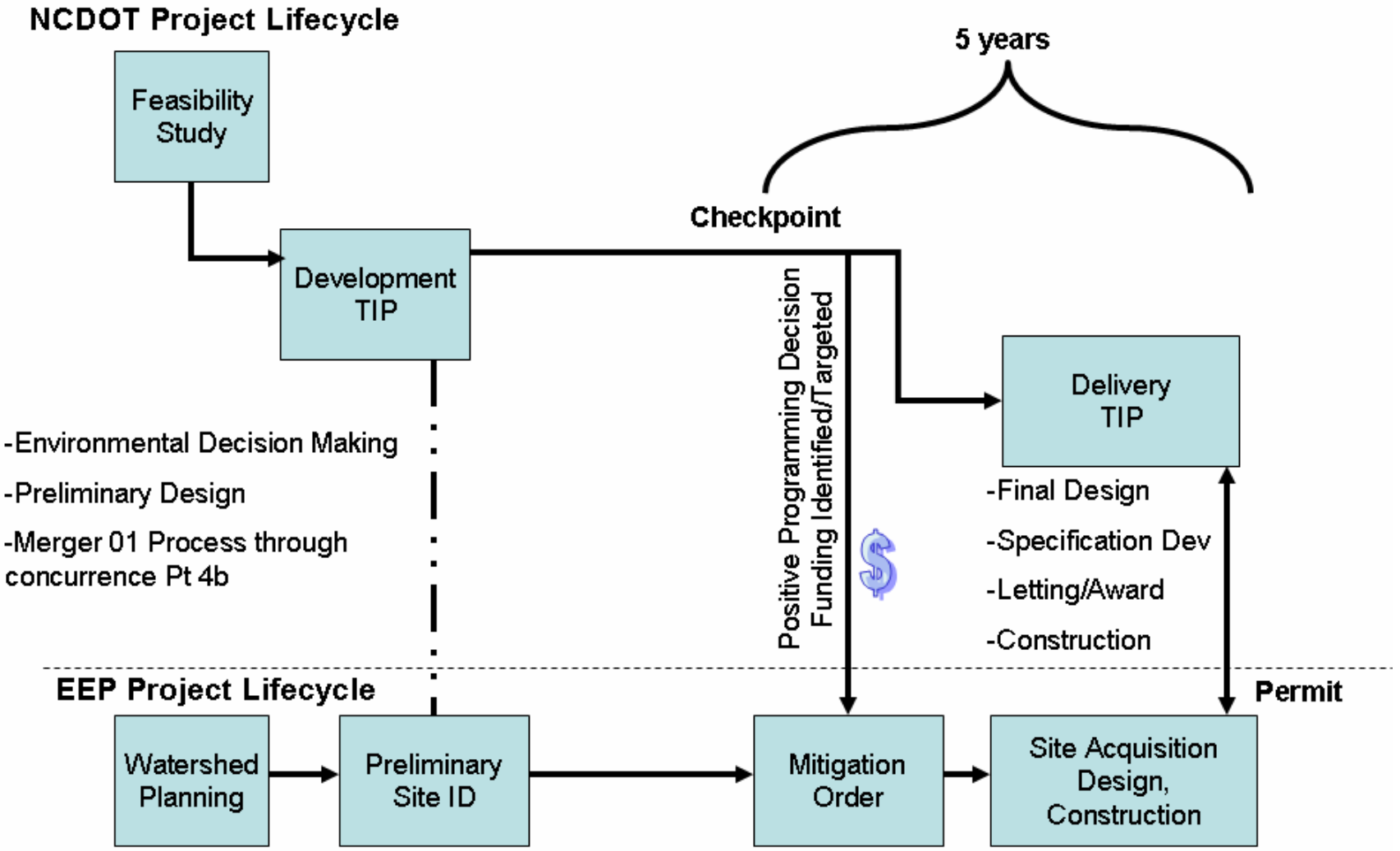
2. Shift from advanced mitigation to a just-in-time mitigation approach.

NCDOT and the EEP should shift from the current advanced mitigation approach to more of a just-in-time mitigation approach, where mitigation is ordered and work is initiated well in advance of starting construction, but only at a point where there is a firm commitment by NCDOT that the transportation project will actually be executed and where the actual requirements for mitigation are more clearly understood, because most of the collaborative decision-making in the Merger 01 process has been completed.

It is our recommendation that NCDOT should order mitigation only when a project is programmed into the delivery TIP (essentially no earlier than at the time of the completion of the draft environmental document). This will provide an improved understanding of the real needs for mitigation, a higher certainty that a project will be built, and a forecast of when it will be built.

Exhibit VII-1 illustrates the activities incorporated into the proposed two-phases of the TIP and outlines the relative timing and dependencies between the transportation lifecycle and the EEP's project lifecycle for implementing required mitigation.

Exhibit VII-1: Just-In-Time Mitigation



This approach would generally allow for approximately five years of project development time for EEP to implement the necessary mitigation. This time frame is on the outer limits of the general timeline it currently takes for EEP to complete a design-bid-build project (four and a half to five years) and a much longer time frame than it normally takes to complete a full delivery project. In addition, it is not unreasonable to expect EEP to be able to shorten the time required to complete design-bid-build projects by six months to a year, as it matures this delivery approach and both EEP and consultant staff gain more experience in delivering under this model.

Because this recommendation reduces the time the EEP will have to implement the required mitigation, we recognize that this presents a small increase in risk. However, we believe this is more than offset by the greater certainty that the transportation project will actually be built and the increased predictability the EEP will have about the mitigation actually required for the project. In addition, to mitigate against the risk of a reduced timeline, the EEP can perform some initial site selection activities as an extension of its watershed planning efforts for projects that are advancing through the development phase of the TIP.

3. Transition from an expense reimbursement methodology to a per – credit-fee basis.

NCDOT should shift from compensating the EEP on an expense reimbursement methodology to a per-credit fee basis when mitigation is ordered at the time the project is programmed for construction. We believe that this recommendation should be implemented as the current build-out of mitigation is completed and the just-in-time mitigation approach based on the two-phased TIP is initiated. However, this transition from the current cost recovery approach to a per-credit-fee basis will have to be carefully staged and managed to reduce unintended financial impacts to either NCDOT or the EEP. In addition, a rate-setting process with a procedure for annual adjustments to the rate schedule will need to be defined and incorporated within the MOA. This rate schedule could also potentially be tied to the rate schedule for the in-lieu fee program.

This per-credit-fee basis is similar in concept to the payment made at the time mitigation is ordered by participants in the in-lieu fee program. In the case of the in-lieu fee program, customers receive a receipt at the time of payment that represents a legal commitment on the part of the EEP to provide the required mitigation and a transfer of responsibility for providing this mitigation from the permit applicant to the EEP. The adoption of a per-credit-fee approach would in effect create this same clean, clear, and legal transfer of responsibility for mitigation from NCDOT to EEP at a defined snapshot point in time. It would also simplify the ongoing internal NCDOT accounting for mitigation costs (i.e., the per-credit cost would be billed directly to the project ordering the mitigation) and would simplify federal-aid billing, as the cost could be billed to FHWA at the time the expense is incurred by NCDOT.

This approach may not reduce the cost to NCDOT of acquiring the specific mitigation required for an individual project. We believe, however, that this approach will contribute to reducing the total cost of the overall mitigation program on a go forward basis. It will ensure that payment is made for mitigation credits which are specifically required for a project that is programmed for construction based on a refined estimate of the mitigation needed. In addition, this payment will be made only at the time the EEP actually begins work to acquire the needed mitigation.

4. Initiation by NCDOT of regular billing of FHWA for the federal share of the cost of the EEP.

While the study team recognizes that NCDOT is maximizing its federal transportation funds, there is some risk of failing to submit timely billings, especially for a program that is innovative in nature, such as the EEP, and that by consequence does not have a track record of established precedent for addressing billing issues that may arise.

5. Development by the EEP of a more effective management scorecard and strengthening of its overall communications outreach.

The EEP should develop an executive-level management scorecard that summarizes the status of the EEP program against a number of key metrics. EEP senior management should then utilize this management scorecard as the basis for regularly scheduled meetings with key stakeholder groups such as Environmental Review, Joint Transportation, the Environmental Management Commission and the Board of Transportation. The EEP's senior management should also make an effort to reach these stakeholders periodically in informal settings and on a 1:1 basis as required to address specific issues and concerns of individual stakeholders.

D. Watershed Planning

This subsection presents our recommendations concerning the strengthening of the watershed planning process. Our recommendations in this area include:

- Improve integration of the EEP's watershed planning with DWQ's basin-wide planning.
- Strengthen the end products resulting from the watershed planning process to define specific priority projects.
- Link the CWMTF grant application process more closely to watershed plans.

1. Improve integration of watershed planning with basin-wide planning.

Currently, DWQ conducts basin-wide planning, while EEP conducts watershed planning at the basin level and the produces more detailed.plans for specific cataloguing units where the anticipated level of impacts in a cataloguing unit merit the

time and cost of developing the detailed plan. These detailed watershed plans are then utilized as a one of several tools in site selection for mitigation projects required within a particular cataloguing unit.

The study team believes that there should be tighter linkages between these two separate planning processes being conducted by two different units with NCDENR. At the same time, we recognize that the EEP's watershed planning process is also one of its site selection tools.. This makes the issue of merging the two planning processes organizationally more complicated.

However, this issue was not a primary subject of this study, and thus, we believe that additional study is warranted by NCDENR management to investigate the feasibility of various approaches for enhancing the integration between these two planning processes. As part of this effort, the study team has identified a potential alternative:

- Establishment of a multi-disciplinary water resources planning group that, like the transportation planning organizations within state transportation agencies, would have responsibility for all water resource planning in North Carolina. This function would incorporate the basin planning be performed within DWQ and the watershed planning performed today within the EEP. This group could be partially funded by the EEP (watershed planning is funded today as an extension of the cost of implementing mitigation) and partially by a budgetary allocation from the General Assembly for water resources planning.

2. Strengthen the end-products from the watershed planning process to define specific priority projects.

This recommendation involves strengthening the watershed planning process to better articulate needs to the full delivery providers. This might include releasing a list of specific projects to meet needs identified in the watershed plans, including cost estimates and suggested timing and sequencing for these projects. This would create for water resources, in effect, an equivalent to the list of potential projects developed during the transportation planning process that provide a defined list of needs and a suggested list of priority projects that form the basis for projects to be included in the TIP. This "water improvement program" for each watershed would then be reviewed with various stakeholders and could also be integrated into the CWMTF grant application and selection process as described in Section VII.D.3 below.

3. Link the CWMTF grant application process more closely to watershed plans.

This recommendation involves integrating the CWMTF in the watershed planning process and in the definition of the list of proposed capital projects within each watershed. The CWMTF would then market these potential projects to prospective grantees in order to encourage applicants to pursue one or more of these high-priority projects. This recommendation would also involve modifying the CWMTF grant

selection process to provide additional weight through substantial bonus points to prospective grantees who are proposing to address high-priority needs and/or the targeted capital projects as identified in the enhanced watershed plans.

Implementation of this recommendation would create additional synergy between the two programs. It would also help to address concerns on the part of some stakeholders about the quality or environmental value of some projects awarded by the CWMTF.

E. Functional Mitigation and Out-of-the-Box Mitigation

This subsection provides our recommendations concerning functional mitigation and out-of-the-box mitigation. "Functional mitigation" or "functional replacement" refers to mitigating or replacing the *functions* lost as a result of a permitted impact to a wetland or stream (as opposed to mitigating or replacing the lost *acreage*). Functions are the services that the resource provides, e.g., water purification, protection from flooding, and habitat for fish and wildlife are common services provided by wetlands.

These recommendations include the following:

- Engage the EEP and the CWMTF as partners in at least two pilot functional mitigation projects.
- Create a partnership between the EEP and the CWMTF to work with the regulatory agencies to develop a pilot of an out-of-the-box mitigation project.

Each of these recommendations is described in further detail below.

1. Engage the EEP and the CWMTF as partners in at least two pilot functional mitigation projects.

The EEP is currently working on several functional mitigation initiatives. We recommend that the EEP engage the CWMTF as a partner in at least two pilot functional mitigation projects. We believe that the integration of the CWMTF as a partner in these projects may allow the EEP, by combining EEP's funds with funding through CWMTF, to implement additional elements within a project, such as some best management practices for which regulatory agencies would not typically allow mitigation credit. In this scenario, the involvement of CWMTF would allow the project to achieve enhanced environmental outcomes.

A key element in this recommendation will be the application of the North Carolina Wetlands Assessment Method (NC WAM), which provides a field method to determine the level of function of a wetland relative to a reference condition (where available). If adopted, NC WAM could be used toward mitigation planning and tracking functional replacement across the state. North Carolina is also currently working on the North Carolina Stream Assessment Method (NC SAM), although it will not be released for comment until 2008. NC SAM, when completed, will also play a key role in the full implementation of this recommendation.

2. Create a partnership between the EEP and the CWMTF to work with the regulatory agencies to develop a pilot of an out-of-the-box mitigation project.

The EEP and the CWMTF should develop a partnership for purposes of working with the regulatory agencies (i.e., USACE, DWQ, EPA) to develop a pilot of an out-of-the-box mitigation project. This project would seek to innovate on a pilot basis the application of non-traditional mitigation (i.e., replacement of a waste water plant, etc.), with the EEP and the CWMTF partnering together on the project and the EEP receiving mitigation credits based on its share of the funding, as determined through a methodology agreed to by the regulatory agencies.

The study team recognizes that this recommendation may be a difficult sell with the regulatory agencies. However, we believe it is appropriate to pursue this recommendation for a number of reasons:

- The proposed project is simply a pilot to demonstrate the efficacy of the concept and identify issues and opportunities surrounding this type of strategy.
- The application of innovative mitigation would be a direct result of needs identified in the watershed plans and as such represents the next natural progression in the integration of watershed planning into the mitigation process.
- The use of out-of-the-box mitigation approaches increases the opportunities for the EEP and the CWMTF to partner together to achieve enhanced environmental outcomes.
- The EEP is recognized nationally as both a model and an innovative program. As such, it is an appropriate choice for a learning lab to demonstrate and evaluate the application of innovative approaches.

F. Private Mitigation Banking

The EEP should implement a private mitigation banking pilot program to further evaluate the role that mitigation banking can play in providing mitigation credits for transportation projects in North Carolina. It is recommended that this pilot program be initiated in at least two watersheds for three years, with one cataloguing unit being a watershed with significant demand and the second watershed being one where less demand is anticipated and that might not be typically thought of as conducive to mitigation banking. This pilot program can take one or both of the following forms:

1. Implementation of a "modified full delivery program."

In this approach, the EEP would select one or more firms to act as their "mitigation bank" in a given watershed. EEP would agree to work exclusively with these firms and to purchase from them all credits needed in the specific watersheds for a three-

year period. Credits would be purchased at a rate schedule established as part of the contract negotiation.

Unlike in the current full delivery program, the provider would be compensated only upon delivery of the actual credit. The selected full delivery providers would be provided with the updated demand forecast on a regular basis and given the watershed plans. They would be expected to link their mitigation sites to the watershed plans to the extent practical.

A primary advantage of this approach is that it would allow a mitigation banking model to be simulated, but this could be executed and evaluated in a framework in which EEP maintains management control, thus reducing the risk of delaying the delivery of needed mitigation.

2. Transfer of responsibility to private mitigation banks.

In this approach, the EEP could exit from one or more watersheds where private mitigation banks are already in place or in development and essentially contract with these banks to provide all of the necessary credits in the particular watershed for the next three years. In this scenario, during the pilot period, the EEP could remain the single point of contact, with the EEP obtaining credits from the various banks based on the needs defined by NCDOT. Or alternatively, NCDOT could work directly with one or more mitigation banks for its needs in the watersheds which EEP has transitioned out of.

The study team believes this recommendation has a number of important benefits including:

- Expanding the use of mitigation banking within the overall EEP model is consistent with the sprit and intent of the anticipated federal rule-making that is expected, even with potential modifications from the draft rule, to place an increased emphasis on the role of mitigation banking nationally.
- Providing an opportunity for the mitigation banking community to demonstrate the expanded role they could play in providing needed credits for mitigation in North Carolina in a lower-risk pilot environment.

G. EEP Project Delivery Processes

This subsection describes recommendations related to the EEP's project delivery processes. These recommendations include:

- Avoid using the design-bid-build and full delivery processes within the same cataloguing unit.
- Increase the maximum contract amounts of the on-call engineering contracts.
- Initiate a design-build pilot.

- Strengthen internal EEP project management skills and processes.

Each of these recommendations is described in further detail below.

1. Avoid using the design-bid-build and the full delivery processes within the same cataloguing unit.

The EEP should avoid using the design-bid-build and full delivery processes within the same cataloguing unit. This should be executed only as an exception process with the approval of the Director of the EEP and upon consultation with the PAC/G.

This will allow the EEP to avoid conflicts in which the EEP competes against itself for mitigation sites by recruiting engineering firms in the design-bid-build process to search for sites in a watershed while the EEP has initiated an RFP for full delivery services in that watershed and the potential full delivery providers are also negotiating for mitigation sites. Likewise, the EEP will also avoid situations where it may disadvantage a property owner whom it has been working with by excluding a person's property from potential selection and acquisition by a full service delivery provider.

2. Increase the maximum contract amounts of the on-call engineering contracts.

The maximum contract amounts on the on-call engineering contracts should be increased from $750,000 to a minimum of $2 million per contractor. This will help the EEP to ensure that it has access to the strongest technical resources and expertise possible for completing its design-bid-build work. We would encourage the EEP to continue to spread the work over as many firms as possible, as it does today; at the same time, we want the EEP to have the flexibility to retain specific, experienced technical specialists when it is essential to completing a particular project assignment.

3. Initiate a design-build pilot.

The EEP should proceed to initiate the design-build pilot as currently planned. It should then evaluate the effectiveness of this delivery method and assess whether it should utilize this approach as a regular part of its delivery model and, if so, determine the types of project for which the design-build would be most suited.

4. Strengthen the EEP's project management processes and skills.

The EEP should implement enhanced project management procedures and processes based on the Project Management Institute's (PMI) Project Management Book of Knowledge or PMBOK ™. The EEP should also implement a project management training program, including a requirement for all project managers to obtain PMI certification within three years.

H. CWMTF Operations

This subsection describes recommendations related to the CWMTF's internal operations. These include:

- Implement a post-grant outcome measurement and tracking process.
- Implement an electronic application process linked to an enhanced grants accounting/grants management software package.

Both of these recommendations are discussed in further detail below.

1. Implement a post-grant outcome measurement and tracking process.

This recommendation involves the CWMTF implementing a structured process for following up on individual projects at intervals of three and five years following implementation, in order to assess and report on the extent to which these projects met or are meeting the goals and objectives that the grantee proposed to achieve in its application. The lessons learned from these reviews should then be fed back into the grants selection process and used to provide input to potential future applicants who are proposing similar goals and objectives on new projects. The results of this outcome measurement process can also be used as a screen to assess the viability of goals outlined by past applicants in their new applications, based on how well the applicant met his proposed goals and objectives from prior projects.

2. Implement a web-based application process linked to an enhanced grants accounting/grants management software package.

The CWMF should implement a web-based grants application process to the extent practical (some materials may require transmission via hard copy). Based on reviewing the outcome of the implementation of similar web-based functionality in other organizations, this Internet-based functionality will both streamline the application process for grantees and reduce the administrative burden on the CWMTF.

This web-based application process should be built on or integrated with the CWMTF's existing grants-tracking software. The use of this grants-tracking application should also be expanded. Based on an initial review of the application, it appears to have the basic functionality usually found in a grants management application. The CWMTF should roll out this application for use by all staff. It should also migrate the grants accounting functions to this software application, as opposed to using the existing spreadsheet tools.

In addition to these recommendations concerning aspects of the CWMTF operations, there are several other recommendations that involve coordination and collaboration between EEP and CWMTF. These recommendations have been discussed in detail elsewhere in this chapter but have been itemized here for ease of reference. These recommendations included:

- The General Assembly should consider removing the prohibition on CWMTF participating in compensatory mitigation. (please refer to Section VII.A.3)
- Linking EEP's watershed planning process with the CWMTF's grant application and selection process (please refer to Section VII.D.3). We envision this to include an active marketing of priority projects identified in an enhanced watershed planning process to potential CWMTF grantees in order to encourage these priority projects to be pursued. This recommendation would also involve a revision of the CWMTF application scoring process to award substantial bonus points for grantees proposing either to implement a priority project identified in the watershed plans or to otherwise address a high priority need identified in a watershed plan.
- Developing a partnership between EEP and CWMTF to provide a mechanism to help other state agencies, local governments, or land trusts acquire EEP mitigation lands that may be declared as surplus (please refer to Section VII.B.4).
- Developing a partnership between EEP and CWMTF to jointly pursue functional replacement projects and a pilot of an out-of-the-box mitigation project (please refer to Section VII.E.2).

I. Other Recommendations

Two additional recommendations relate to standardizing the monitoring and stewardship processes and establishing common document templates between the EEP and the CWMTF. First, we would recommend that the EEP and the CWMTF, along with other appropriate parties with NCDENR, re-engage in discussions to find a common approach to performing site stewardship versus having two different approaches. Second, we would suggest that the EEP and the CWMTF collaborate with the State Property Office in reviewing various forms, such as conservation easements, in an effort to achieve as much commonality as is possible, given that the programs have different types of restrictions on which activities can or cannot be performed within a conservation easement.

VIII. Implementation Plan

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This section presents Dye Management Group, Inc.'s suggested timeline and sequencing for implementation of the recommendations. In preparing this timeline, the study team has attempted to clearly delineate between recommendations, such as renegotiating elements of the MOA to obtain additional flexibility and managing the surplus, which must be addressed immediately, and other recommendations that can be implemented either over the next two years and/or that have a logical transition point as the current mitigation build-out begins to level off.

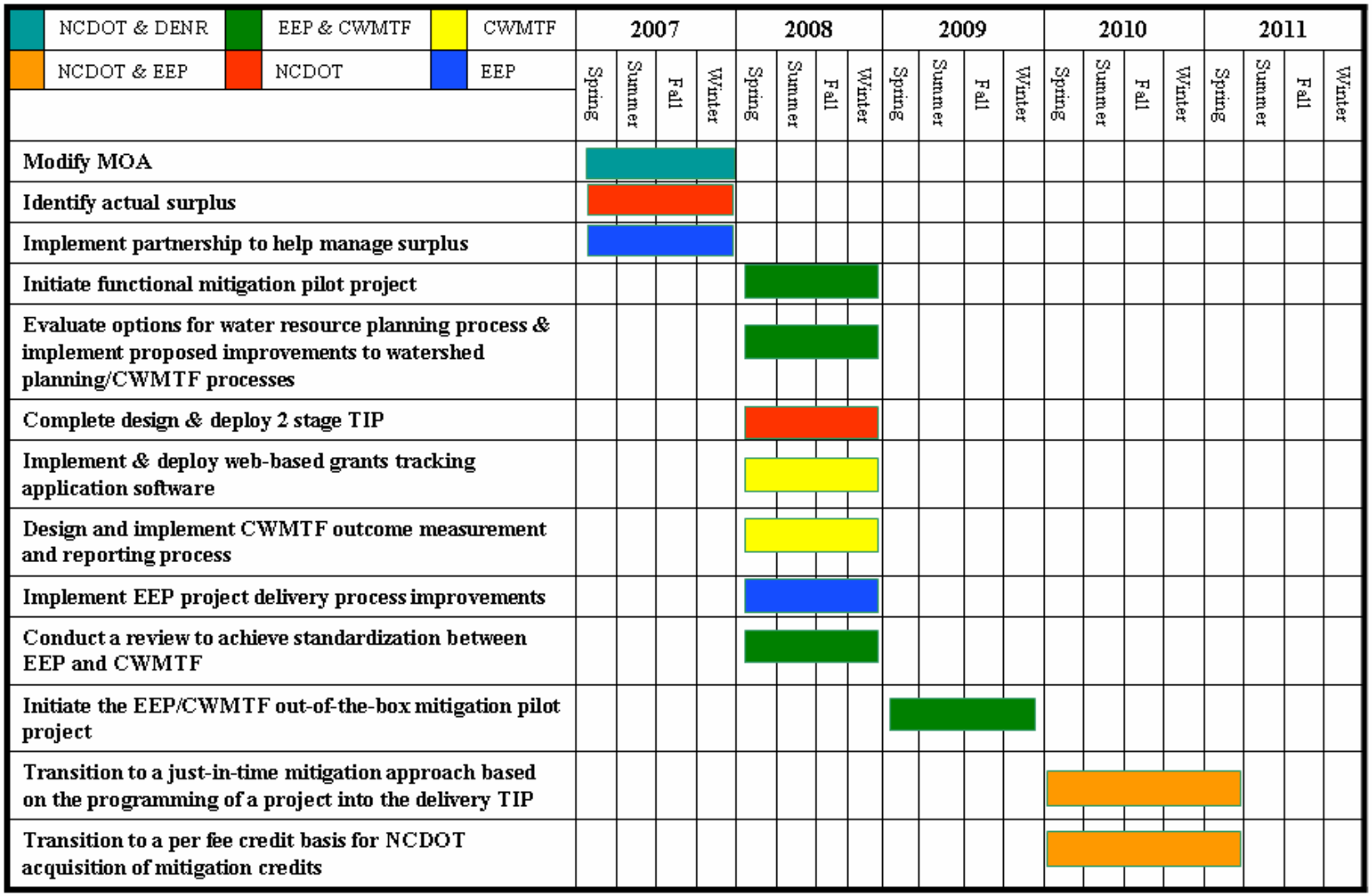
Exhibit VIII-1 provides a graphical illustration of the timeline and sequencing of our proposed recommendations. It also provides a color-coded designation of the various agencies who have ownership for implementing the different recommendations.

It is important to note that implementation of these recommendations will require:

- Ongoing senior executive engagement from the NCDOT and NCDENR management team.
- Ongoing coordination between EEP, CWMTF, NCDENR management and NCDOT
- Stakeholder support and buy-in including from the USACE and DWQ, as well as from various environmental advocacy organizations.

The specific timing for different recommendations and the rationale for this timing are discussed below.

Exhibit VIII-1: Implementation Timeline



A. Recommendations Targeted for Completion by the End of December 2007

Dye Management Group, Inc. believes that, given the extensive build-out of mitigation that is occurring, the timing for addressing recommendations related to managing the surplus and taking steps to reduce the likelihood of similar problems in the future is essential. It is critical that by the end of this calendar year, the following steps will have been accomplished:

- Modification of the MOA to provide additional flexibility in utilizing surplus credits in one cataloguing unit in other cataloguing units within the same river basin.
- Modification of the MOA to include a direction statement on lower ratios for mitigation that is in place.
- Identifying the actual surplus property, defining a plan for each property identified as surplus, and beginning the process of disposing of any assets that are to be sold.
- Implementing the partnership between EEP and CWMTF to provide a mechanism for selling surplus property.
- Establishing an acquisition review process should be established which actively involves EEP in reviewing each acquisition to assess the applicability of utilizing any proposed state land acquisition for mitigation credit.

To fully implement these recommendations, we believe that executive level involvement by the secretary of NCDENR, the secretary of NCDOT and the colonel in charge of the Wilmington district of the USACE will be required to renegotiate the MOA, and that executive leadership from NCDENR and NCDOT will also be required to address the existing surplus.

Likewise, it is suggested that these additional recommendations be implemented this calendar year:

- Initiation of regular billing of FHWA by NCDOT for the federal share of the cost of EEP should occur by the end of this calendar year.
- Development by EEP of a more effective summary management report and strengthening of the overall communication outreach.

B. Recommendations Targeted for Completion within 12 to 18 Months (December 2008)

Dye Management Group, Inc. would recommend targeting these recommendations for either implementation or, in the case of pilot projects, initiation by the end of 2008. These activities include:

- Initiating the EEP/CWMTF functional mitigation pilot project.

- Initiating the mitigation banking pilot project.
- Evaluating options for further integrating the various water resource planning processes.
- Implementing proposed improvements to the outputs from the watershed planning process and strengthening linkages with the CWMTF application process.
- Completing design and deploying the two-stage TIP.
- Implementing the web-based grants application functionality for the CWMTF and deploying the full capabilities of the CWMTF grants tracking software.
- Designing and beginning implementation of an outcome measurement and reporting process for the CWMTF.
- Implementing the various process improvements recommended for EEP's project delivery processes, including initiation of project management training, modification of contract ceilings, and initiation of a design-build pilot project.
- Conducting additional discussions and assessing approaches for standardizing stewardship processes across the EEP and the CWMTF.
- Conducting a review of various forms and templates to achieve standardization between the EEP and the CWMTF to the extent possible.

C. Recommendations Targeted for Completion within 24 to 30 Months (by December 2009)

Dye Management Group, Inc. would recommend targeting the following recommendation for initiation by the end of 2009:

- Initiating of the EEP/CWMTF out-of-the-box mitigation project. It is believed that this type of lead time will be necessary to present the concept to and gain buy-in from the various regulatory agencies, including likely discussions with Washington-based policy staff of EPA and USACE.
- Removing the prohibition on the CWMTF participating in mitigation and in place of the outright prohibition establishing a cap on the percentage of CWMTF funding which can be utilized for mitigation. This recommendation would require a statutory change by the General Assembly. CWMTF would then need to update its operational procedures to implement this change in policy direction. Likewise, this change would require planning and executing a structured communications program on the reasons for and benefits of this change. This communication program should be targeted to all impacted stakeholders.

D. Recommendations Targeted for Completion within Approximately 36 to 48 months (by June 2011)

Dye Management Group, Inc. would anticipate targeting these recommendations for approximately 36 to 48 months out (June 2011) because they are dependent on the deployment of the two-stage TIP by NCDOT. In addition, these changes will be best accomplished at a point at which the EEP's delivery of mitigation is beginning to level out. These recommendations include:

- Transition to a just-in-time mitigation approach based on the programming of a project into the delivery TIP.
- Transition to a per-credit-fee basis for NCDOT's acquisition of mitigation credits.

Appendix A: High Quality Preservation Mitigation Sites

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The NCDOT and EEP purchased several tracts of land as part of the "high-quality preservation" component of mitigation projects per the MOA. Appendix A identifies the tracts of land purchased for the "high-quality preservation" effort as of May 11, 2007. An effort was made to reconcile the lists from NCDOT and EEP; however, the name given to the tract may have been changed during the purchase and/or use of credits from the site. Two sites in the list have been identified as having other mitigation value in addition to their high-quality preservation values.

Exhibit A-1: High Quality Preservation Mitigation Sites (as of 5/11/2007) – Sorted by River Basin - CU

Site Name	County	River Basin	CU	Purchasing Agency	Estimated Cost	Preservation Only?
Canal Branch (Bishop)	Anson	Yadkin	03040105	EEP	$315,560	Yes
Elks Shoals	Ashe	New	05050001	EEP	$164,606	Yes
New River Heights	Ashe	New	05050001	EEP	$381,818	Yes
Roanoke River (Cashie)	Bertie	Roanoke	03010107	EEP	$715,000	Yes
Roquist Pocosin	Bertie	Roanoke	03010107	NCDOT	$4,135,465	No
Juniper Creek IP	Brunswick	Lumber	03040206	EEP	Under Contract	Yes
Sandy Mush I & II	Buncombe/Madison	French Broad	06010105	EEP	$9,222,000	No
White Creek (Linville)	Burke	Catawba	03050101	EEP	$1,150,000	Yes
Dutch Buffalo Creek (Walker)	Cabarrus	Yadkin	03040105	EEP	$134,684	Yes
Dutch Buffalo Creek (Wickliff)	Cabarrus	Yadkin	03040105	EEP	$10,936	Yes
Mingo Tract	Caldwell	Yadkin	03040101	NCDOT	$7,533,713	Yes
Country Line Creek (Mackovich)	Caswell	Roanoke	03010104	EEP	$243,000	Yes
Hyco Lake (Bessemer)	Caswell	Roanoke	03010104	EEP	$1,002,276	Yes
Haw River (Duke Forest)	Chatham	Cape Fear	03030002	NCDOT	$2,343,000	Yes
Deep Creek (Hanson)	Chatham	Cape Fear	03030003	EEP	Under Contract	Yes
White Pines/Newton Tract	Chatham	Cape Fear	03030003	NCDOT	$170,000	Yes
Chowan River (Harrell)	Chowan	Chowan	03010203	EEP	$102,600	Yes
Broad River Greenway	Cleveland	Broad	03050105	NCDOT	Not Available	Yes
Juniper Creek IP	Columbus	Lumber	03040206	EEP	Under Contract	Yes
Big Pond Bay	Cumberland	Cape Fear	03030006	EEP	$33,333	Yes
Rhodes Pond	Cumberland	Cape Fear	03030006	NCDOT	Not Available	Yes
Davis (Yadkin River)	Davie	Yadkin	03040101	NCDOT	$241,938	Yes
Flat River (Treyburn)	Durham	Neuse	03020201	EEP	$1,843,662	Yes
Stevens Pennys Bend	Durham	Neuse	03020201	EEP	$934,200	Yes
Fishing Creek (Hall)	Edgecombe	Tar-Pamlico	03020102	EEP	$763,768	Yes
IP Lower Fishing Creek 2	Edgecombe	Tar-Pamlico	03020102	EEP	Under Contract	Yes
Allen Site	Franklin	Tar-Pamlico	03020101	NCDOT	$528,273	Yes
Cypress Creek (Langley)	Franklin	Tar-Pamlico	03020101	EEP	$148,368	Yes
Harris*	Franklin	Tar-Pamlico	03020101	NCDOT	Not Available	Yes
Little Shocco (Senter)	Franklin	Tar-Pamlico	03020101	EEP	$145,535	Yes
Swift Creek (Harper Sandy)	Franklin	Tar-Pamlico	03020101	EEP	$99,324	Yes
Swift Creek (O'Neal-Sandy)	Franklin	Tar-Pamlico	03020101	EEP	$66,600	Yes
Cedar Creek (Perry)	Franklin	Tar-Pamlico	03020102	EEP	$552,299	Yes
Fishing Creek (Gold Mine)	Franklin	Tar-Pamlico	03020102	EEP	Under Contract	Yes

Site Name	County	River Basin	CU	Purchasing Agency	Estimated Cost	Preservation Only?
Fishing Creek (Sturgis)	Franklin	Tar-Pamlico	03020102	EEP	$48,578	Yes
Little Shocco (Tomlinson)	Franklin	Tar-Pamlico	03020102	EEP	$233,850	Yes
Little Shocco (Wheless)	Franklin	Tar-Pamlico	03020102	EEP	$52,668	Yes
Sandy Creek (A & P Timber)	Franklin	Tar-Pamlico	03020102	EEP	$66,564	Yes
Sandy Creek (Faulkner)	Franklin	Tar-Pamlico	03020102	EEP	$73,058	Yes
Sandy Creek (Mullen)	Franklin	Tar-Pamlico	03020102	EEP	$84,453	Yes
Sandy Creek (Parrish)	Franklin	Tar-Pamlico	03020102	EEP	$113,652	Yes
Sandy Creek (Young)	Franklin	Tar-Pamlico	03020102	EEP	$157,806	Yes
Shocco (Alston Tracts 1-3)	Franklin	Tar-Pamlico	03020102	EEP	$1,271,832	Yes
Shocco (Capps)	Franklin	Tar-Pamlico	03020102	EEP	$77,506	Yes
Shocco Creek (Gupton)	Franklin	Tar-Pamlico	03020102	EEP	$602,828	Yes
Tar River (Hodges)	Franklin	Tar-Pamlico	03020102	EEP	$150,120	Yes
Little Shocco (O'Neal)	Franklin/Warren	Tar-Pamlico	03020102	EEP	$93,636	Yes
Rankin Gaston	Gaston	Catawba	03050101	NCDOT	$3,187,622	Yes
Tar River (Guthrie)	Granville	Tar-Pamlico	03020101	EEP	$442,160	Yes
Tar River (MacNair)	Granville	Tar-Pamlico	03020101	EEP	$716,152	Yes
Tucker (Daniels 1)	Granville	Tar-Pamlico	03020101	EEP	$72,596	Yes
Tucker (Daniels 2)	Granville	Tar-Pamlico	03020101	EEP	$8,951	Yes
Fishing Creek (Slaughter)	Granville	Tar-Pamlico	03020102	EEP	$126,900	Yes
Shelton Creek (Peterson)	Granville	Tar-Pamlico	03020102	EEP	$145,989	Yes
Shelton Creek (Thorpe II)	Granville	Tar-Pamlico	03020102	EEP	$187,920	Yes
Tar River (Averett)	Granville	Tar-Pamlico	03020102	EEP	$40,896	Yes
Tar River (B. Harris)	Granville	Tar-Pamlico	03020102	EEP	$139,752	Yes
Tar River (Betty Crews)	Granville	Tar-Pamlico	03020102	EEP	$102,635	Yes
Tar River (Roy Crews)	Granville	Tar-Pamlico	03020102	EEP	$36,252	Yes
Tar River (Dean)	Granville	Tar-Pamlico	03020102	EEP	$254,040	Yes
Tar River (Oakley)	Granville	Tar-Pamlico	03020102	EEP	$53,160	Yes
Tar River (Pitts)	Granville	Tar-Pamlico	03020102	EEP	$101,196	Yes
Tar River (Sherman 1)	Granville	Tar-Pamlico	03020102	EEP	$57,492	Yes
Tar River (Sherman 2)	Granville	Tar-Pamlico	03020102	EEP	$101,196	Yes
Tar River (Smitherman)	Granville	Tar-Pamlico	03020102	EEP	$72,972	Yes
Tar River (Winslow)	Granville	Tar-Pamlico	03020102	EEP	$132,808	Yes
Haw River (Phillips)	Guilford	Cape Fear	03030002	EEP	$424,592	Yes
Roanoke River	Halifax	Roanoke	03010107	EEP	$606,212	Yes
White Pines Hearn	Lee	Cape Fear	03030003	EEP	$407,100	Yes
Lost Bridge	Macon	Little Tennessee	06010202	NCDOT	$511,521	Yes

Site Name	County	River Basin	CU	Purchasing Agency	Estimated Cost	Preservation Only?
Lone Mountain (NM)	McDowell	Catawba	03050101	EEP	$119,676	Yes
Bruchon	Mitchell	French Broad	06010108	EEP	$164,898	Yes
Little Tablerock	Mitchell	French Broad	06010108	EEP	$960,000	Yes
Barnes Creek (Wysner Mountain)	Montgomery	Yadkin	03040103	EEP	$212,321	Yes
Uwharrie River (Bingham)	Montgomery	Yadkin	03040103	EEP	$2,248,624	Yes
Uwharrie River Bluff	Montgomery	Yadkin	03040103	EEP	$87,648	Yes
Little River (Cochran)	Montgomery	Yadkin	03040104	EEP	$70,835	Yes
Deep River (Jordan)	Moore	Cape Fear	03030003	EEP	Under Contract	Yes
Deep River (Paschal)	Moore	Cape Fear	03030003	EEP	Under Contract	Yes
Glendon Slate Creek (Paschal)	Moore	Cape Fear	03030003	EEP	Under Contract	Yes
Deep/Sandy Creek (McKean)	Moore	Lumber	03040203	EEP	$200,319	Yes
Drowning Crk (Camp McCall)	Moore	Lumber	03040203	EEP	$830,000	Yes
Drowning Creek II Rankin (Beaverdam Pines)	Moore	Lumber	03040203	EEP	$1,909,232	Yes
Drowning Creek (Forest Inv)	Moore	Lumber	03040203	EEP	$290,099	Yes
Wimberley	Moore	Lumber	03040204	EEP	$71,000	Yes
Edwards	Nash	Tar-Pamlico	03020102	EEP	$301,254	Yes
Upper Roanoke (Civil War)	Northampton	Roanoke	03010107	EEP	Under Contract	Yes
Upper Roanoke (Cypress Creek)	Northampton	Roanoke	03010107	EEP	Under Contract	Yes
Upper Roanoke (Odum/Cal)	Northampton	Roanoke	03010107	EEP	Under Contract	Yes
New Hope Creek (Penny)	Orange	Cape Fear	03030002	EEP	$120,840	Yes
Eno River (Cabe's Ford)	Orange	Cape Fear	03030003	EEP	$299,173	Yes
Camp Chestnut Ridge	Orange	Neuse	03020201	EEP	$219,954	Yes
Eno River (Poplar Ridge)	Orange	Neuse	03020201	NCDOT	$501,500	Yes
Eno River (Wilderness)	Orange	Neuse	03020201	EEP	$2,378,276	Yes
NE Cape Fear Wells Tract	Pender	Cape Fear	03030007	EEP	$252,000	Yes
Wallace Deer Club Tracts 1-2	Pender	Cape Fear	03030007	EEP	$82,500	Yes
Wallace Deer Club Tracts 3-5	Pender	Cape Fear	03030007	EEP	$697,551	Yes
Tar River (Pories)	Pitt	Tar-Pamlico	03020103	EEP	$86,164	Yes
Green River (Boyer)	Polk	Broad	03050105	EEP	$101,121	Yes
Green River (Ward)	Polk	Broad	03050105	EEP	$49,248	Yes
North Pacolet Childers	Polk	Broad	03050105	EEP	$215,000	Yes
Old Cove	Polk	Broad	03050105	EEP	$54,400	Yes
Skyuka Creek (Luthi)	Polk	Broad	03050105	EEP	$56,156	Yes
Tobey/Melrose Mountain	Polk	Broad	03050105	EEP	$321,000	Yes
Uwharrie River (Whatley)	Randolph	Yadkin	03040103	EEP	$70,670	Yes
Little River (Baker)	Randolph	Yadkin	03040104	EEP	$40,592	Yes

Site Name	County	River Basin	CU	Purchasing Agency	Estimated Cost	Preservation Only?
Little River (Lewis)	Randolph	Yadkin	03040104	EEP	$165,543	Yes
Little River (Parker)	Randolph	Yadkin	03040104	EEP	$136,000	Yes
Little River (Walbourn)	Randolph	Yadkin	03040104	EEP	$153,245	Yes
Hitchcock Creek (McDonald)	Richmond	Yadkin	03040201	EEP	$87,098	Yes
Mayo River (Gorrel)	Rockingham	Roanoke	03010103	EEP	$36,945	Yes
Mayo River (Grogan)	Rockingham	Roanoke	03010103	EEP	$187,018	Yes
Mayo River (Hickory Creek)	Rockingham	Roanoke	03010103	EEP	$177,936	Yes
Mayo River (Walker)	Rockingham	Roanoke	03010103	EEP	$32,625	Yes
Crowther North	Rowan	Yadkin	03040102	EEP	$68,455	Yes
Pickler's Bluff	Rowan	Yadkin	03040102	EEP	$84,000	Yes
Dutch Second Creek (Hill)	Rowan	Yadkin	03040103	EEP	$50,952	Yes
Lone Mountain (SM)	Rutherford	Broad	03050105	EEP	Not Available	Yes
Great Cohaire	Sampson	Cape Fear	03030006	EEP	$3,234,442	Yes
Fisher River (Fisher Peak)	Surry	Yadkin	03040101	EEP	Under Contract	Yes
Len's Knob/Little Mountain	Surry	Yadkin	03040101	NCDOT	$3,419,912	Yes
Mill Creek (Steele)	Surry	Yadkin	03040101	EEP	Under Contract	Yes
Needmore	Swain	Little Tennessee	06010202	NCDOT	$7,526,316	Yes
Dupont Forest	Transylvania	French Broad	06010105	NCDOT	$4,000,000	Yes
Swift Creek	Wake	Neuse	03020201	EEP	$166,760	Yes
Fishing Creek (Capps)	Warren	Tar-Pamlico	03020102	EEP	$147,130	Yes
Fishing Creek (Capps Farm)	Warren	Tar-Pamlico	03020102	EEP	$142,708	Yes
Fishing Creek (Capps Forest)	Warren	Tar-Pamlico	03020102	EEP	$70,394	Yes
Fishing Creek (Green)	Warren	Tar-Pamlico	03020102	EEP	$80,874	Yes
Fishing Creek (Maple Branch)	Warren	Tar-Pamlico	03020102	EEP	Under Contract	Yes
Fishing Creek (Shearin)	Warren	Tar-Pamlico	03020102	EEP	$194,867	Yes
IP Upper Fishing Creek 2	Warren	Tar-Pamlico	03020102	EEP	Under Contract	Yes
IP Upper Reedy Creek	Warren	Tar-Pamlico	03020102	EEP	Under Contract	Yes
Little Fishing	Warren	Tar-Pamlico	03020102	EEP	Under Contract	Yes
Little Shocco Speed 1	Warren	Tar-Pamlico	03020102	EEP	$178,200	Yes
Reedy Creek (Johnston)	Warren	Tar-Pamlico	03020102	EEP	$232,380	Yes
Shocco Creek (Davis)	Warren	Tar-Pamlico	03020102	EEP	$43,416	Yes
Shocco Creek (IP #1)	Warren	Tar-Pamlico	03020102	EEP	Under Contract	Yes
Shocco Creek (IP #2)	Warren	Tar-Pamlico	03020102	EEP	Under Contract	Yes
Morton Tracts-Shelton Creek	Granville			EEP	$21,204	Yes
IP/Alston Tract-Fishing Creek	Warren			EEP	$672,675	Yes
				Total Estimate Cost	$78,261,767	

Appendix B: Transfer from NCDOT Mitigation Program

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Prior to the creation of the Ecosystem Enhancement Program (EEP), the North Carolina Department of Transportation and North Carolina Wetland Restoration Program (pre-cursor to EEP) divided the state of North Carolina into watershed catalog units of responsibility to provide compensatory mitigation for NCDOT Transportation Improvement Program (TIP) projects. Appendix B summarizes the mitigation generated by the NCDOT and transferred over to EEP to use for its projects. Appendix B sorts the mitigation by: river basin name; eight-digit catalog unit (CU) within the river basin; project type for how the mitigation was generated [traditional Design-Bid-Build (DBB), Full Delivery (FD) or Mitigation Bank (MB)]; and, mitigation type (stream restoration, stream enhancement, etc.). The available mitigation has been calculated by project type for the river basin and by river basin. Please note that this appendix only illustrates the river basins and catalog units that displayed activity.

Exhibit B-1: Transfer from NCDOT Mitigation Program

		8 Digit CU	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
Cape Fear		03030003	DBB	20,564	4,834	3,700	5,136	4	0	2	0	2	0	4	0	0	0	0	0
			FD	9,060	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			MB																
		03030005	DBB	0	0	0	0	18	0	0		627	0	18	0	34	0	86	0
			FD	34,005	0	0	0	403	0	25	0		0		0		0		0
			MB	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0
		03030006	DBB	1,970	700	0	0	12	0	14	0	0	0	2	0	0	0	0	0
			FD																
			MB	0	0	0	0	0	0	0	0	160	0	0	0	0	0	0	0
		03030007	DBB	0	0	0	0	12	10	25	521	50	0	107	392	0	0	0	0
			FD																
			MB																
Subtotal - Cape Fear			DBB	22,534	5,534	3,700	5,136	51	16	41	642	679	0	131	392	34	0	86	0
Subtotal - Cape Fear			FD	43,065	0	0	0	403	0	25	0	0	0	0	0	0	0	0	0
Subtotal - Cape Fear			MB	0	0	0	0	0	0	0	0	160	0	0	0	0	0	0	0
Overall total - Cape Fear				65,599	5,534	3,700	5,136	454	16	66	642	839	0	131	392	34	0	86	0
Catawba		03050102	DBB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			FD	21,314	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			MB	3,500	0	0	0	5	5	1	0	0	0	0	0	0	0	0	0
Subtotal - Catawba			DBB	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0

		8 Digit CU	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
Subtotal - Catawba			FD	21,314	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Catawba			MB	3,500	0	0	0	5	5	1	0	0	0	0	0	0	0	0	0
Overall total - Catawba				24,814	0	0	0	7	5	1	0	0	0	0	0	0	0	0	0
Chowan		03010203	DBB	0	1,700	0	3,300	0	0	0	15	5	0	0	10	0	0	0	0
			FD																
			MB																
Subtotal - Chowan			DBB	0	1,700	0	3,300	0	0	0	15	5	0	0	10	0	0	0	0
Subtotal - Chowan			FD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Chowan			MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall total - Chowan				0	1,700	0	3,300	0	0	0	15	5	0	0	10	0	0	0	0
French Broad		06010106	DBB	5,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			FD																
			MB																
Subtotal - French Broad			DBB	5,000	0	0	0	0	0	16	0	0	0	0	0	0	0	0	0
Subtotal - French Broad			FD	0															

		8 Digit CU	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
Subtotal - French Broad			MB	0															
Overall total - French Broad				5,000	0	0	0	0	0	16	0	0	0	0	0	0	0	0	0
Little Tennessee		06010202	DBB	9,000	0	0	0	3	0	0	2	0	0	0	0	0	0	0	0
			FD																
			MB																
		06010204	DBB	2,274	0	0	0	48	0	0	0	0	0	0	0	0	0	0	0
			FD																
			MB																
Subtotal - Little Tennessee			DBB	11,274	0	0	0	51	0	0	2	0	0	0	0	0	0	0	0
Subtotal - Little Tennessee			FD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Little Tennessee			MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall - Little Tennessee				11,274	0	0	0	51	0	0	2	0	0	0	0	0	0	0	0
Lumber		03040203	DBB		0	0	0	150	0	0	4	697	0	0	300	0	0	0	0
			FD																
			MB																
		03040206	DBB	3,282	0	0	1,750	0	0	0	36	0	0	0	2	0	0	0	0
			FD																
			MB																

		8 Digit CU	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
Subtotal - Lumber			DBB	3,282	0	0	1,750	150	0	0	40	697	0	0	302	0	0	0	0
Subtotal - Lumber			FD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Lumber			MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall total - Lumber				3,282	0	0	1,750	150	0	0	40	697	0	0	302	0	0	0	0
Neuse		03020201	DBB	1,619	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
			FD	0	0	0	0	0	0	1	18	0	0	0	0	0	0	0	0
			MB	4,289	0	0	0	9	0	0	50	35	0	0	20	0	0	0	0
		03020202	DBB	9,723	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			FD	0	0	0	0	93	0	90	255	0	0	0	0	0	0	0	0
			MB	0	0	0	0	87	0	34	299	25	0	0	125	0	0	0	0
		03020203	DBB	69	0	0	0	12	0	3	0	0	0	0	0	0	0	0	0
			FD																
			MB	10,670	0	0	0	98	0	1	386	12	0	0	146	0	0	0	0
		03020204	DBB	4,476	1,850	0	3,400	11	0	4	128	0	0	0	2	6	0	0	5
			FD																
			MB	6,416	0	0	0	80	0	100	166	1,407	0	1,984	361	0	0	0	0
Subtotal - Neuse			DBB	15,887	1,850	0	3,400	23	1	8	128	0	0	0	2	6	0	0	5
Subtotal - Neuse			FD	0	0	0	0	93	0	91	273	0	0	0	0	0	0	0	0
Subtotal - Neuse			MB	21,375	0	0	0	273	0	135	902	1,478	0	1,984	652	0	0	0	0
Overall total - Neuse				37,262	1,850	0	3,400	389	1	234	1,302	1,478	0	1,984	653	6	0	0	5

		8 Digit CU	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
New		05050001	DBB	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0
			FD																
			MB																
Subtotal - New			DBB	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0
Subtotal - New			FD																
Subtotal - New			MB																
Overall total - New				0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0
Pasquotank		03020105	DBB	4,400	0	0	0	212	0	21	50	270	0	6	120	0	31	0	181
			FD																
			MB	0	0	0	0	0	0	0	0	564	0	0	19	0	0	0	0
Subtotal - Pasquotank			DBB	4,400	0	0	0	212	0	21	50	823	0	6	120	0	31	0	181
Subtotal - Pasquotank			FD																
Subtotal - Pasquotank			MB	0	0	0	0	0	0	0	0	11	0	0	19	0	0	0	0
Overall total - Pasquotank				4,400	0	0	0	212	0	21	50	834	0	6	139	0	31	0	181
Roanoke		03010102	DBB	0	0	5,000	12,300	0	0	0	0	0	0	0	0	0	0	0	0
			FD																
			MB																
		03010104	DBB	0	0	0	0	89	0	0	19	0	0	0	0	0	0	0	0

		8 Digit CU	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
			FD																
			MB																
		03010107	DBB	0	0	0	500	0	0	0	557	45	0	0	3,386	0	0	0	0
			FD																
			MB																
Subtotal - Roanoke			DBB	0	0	5,000	12,800	89	0	0	576	45	0	0	3,386	0	0	0	0
Subtotal - Roanoke			FD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Roanoke			MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall total - Roanoke				0	0	5,000	12,800	89	0	0	576	45	0	0	3,386	0	0	0	0
Tar-Pamlico		03020102	DBB																
			FD	6,500	0	0	0	75	0	0	0	0	0	0	0	0	0	0	0
			MB																
		03020103	DBB	4,614	6,968	1,876	0	108	57	24	356	24	2	2	1	0	0	0	0
			FD																
			MB																
		03020104	DBB	0	0	4,107	0	1	4	0	77	223	0	0	540	3	0	0	19
			FD																
			MB																
Subtotal - Tar-Pamlico			DBB	4,614	6,968	5,983	0	109	61	24	433	247	2	2	541	3	0	0	19
Subtotal - Tar-Pamlico			FD	6,500	0	0	0	75	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Tar-Pamlico			MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

		8 Digit CU	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
Overall total - Tar-Pamlico				11,114	6,968	5,983	0	184	61	24	433	247	2	2	541	3	0	0	19
Watauga		06010103	DBB	2,800	1,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			FD																
			MB																
Subtotal - Watauga			DBB	2,800	1,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Watauga			FD																
Subtotal - Watauga			MB																
Overall total - Watauga				2,800	1,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White Oak		03020106	DBB	8,332	0	0	1,280	32	0	2	2	65	0	0	152	0	0	0	0
			FD																
			MB																
Subtotal - White Oak			DBB	8,332	0	0	1,280	32	0	2	2	65	0	0	152	0	0	0	0
Subtotal - White Oak			FD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - White Oak			MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall total - White Oak				8,332	0	0	1,280	32	0	2	2	65	0	0	152	0	0	0	0
Yadkin		03040101	DBB																
			FD																

		8 Digit CU	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
			MB	5,225	0	0	2,376	53	20	1	0	0	0	0	0	0	0	0	0
		03040102	DBB	17,703	0	0	0	19	95	11	0	0	0	4	0	0	0	0	0
			FD																
			MB	5,500	0	0	0	0	0	0	0	9	40	5	8	0	0	0	0
		03040103	DBB	28,664	4,200	3,094	24,105	6	0	7	0	4	0	4	0	0	0	0	0
			FD	3,000	0	0	0	20	0	0	2	0	0	0	0	0	0	0	0
			MB																
		03040104	DBB	2,568	0	2,900	3,200	24	0	1	7	0	0	0	0	0	0	0	0
			FD																
			MB																
		03040105	DBB	3,116	1,190	8,500	11,400	0	0	5	0	14	0	11	9	0	0	0	0
			FD																
			MB																
		03040201	DBB																
			FD	10,667															
			MB																
Subtotal - Yadkin			DBB	52,051	5,390	14,494	38,705	49	95	24	7	18	0	19	9	0	0	0	0
Subtotal - Yadkin			FD	13,667	0	0	0	20	0	0	2	0	0	0	0	0	0	0	0
Subtotal - Yadkin			MB	10,725	0	0	2,376	53	20	1	0	9	40	5	8	0	0	0	0
Overall Total - Yadkin				76,443	5,390	14,494	41,081	122	115	24	9	27	40	24	17	0	0	0	0

Appendix C: Transfer from NCDOT Mitigation Program (Summary per Subtotal)

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Appendix C provides data on the NCDOT mitigation program transfer to the EEP. Appendix C summarizes mitigation the mitigation transferred: per river basin and project type, total mitigation transferred by project type; total mitigation for each river basin for all project types; and, a total of mitigation transferred to EEP from NCDOT.

Exhibit C-1: Transfer from NCDOT Mitigation Program (Net Available as of Feb 2007)

	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
Subtotal - Broad	DBB																
Subtotal - Cape Fear	DBB	22,534	5,534	3,700	5,136	51	16	41	642	679	0	131	392	34	0	86	0
Subtotal - Catawba	DBB	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Chowan	DBB	0	1,700	0	3,300	0	0	0	15	5	0	0	10	0	0	0	0
Subtotal - French Broad	DBB	5,000	0	0	0	0	0	16	0	0	0	0	0	0	0	0	0
Subtotal - Hiawassee	DBB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Little Tennessee	DBB	11,274	0	0	0	51	0	0	2	0	0	0	0	0	0	0	0
Subtotal - Lumber	DBB	3,282	0	0	1,750	99	0	0	38	697	0	0	302	0	0	0	0
Subtotal - Neuse	DBB	15,887	1,850	0	3,400	23	1	8	128	0	0	0	2	6	0	0	5
Subtotal - New	DBB	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0
Subtotal - Pasquotank	DBB	4,400	0	0	0	212	0	21	50	823	0	6	120	0	31	0	181
Subtotal - Roanoke	DBB	0	0	5,000	12,800	89	0	0	576	45	0	0	3,386	0	0	0	0
Subtotal - Savannah	DBB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Tar-Pamlico	DBB	4,614	6,968	5,983	0	109	61	24	433	247	2	2	541	3	0	0	19
Subtotal - Watauga	DBB	2,800	1,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - White Oak	DBB	8,332	0	0	1,280	32	0	2	2	65	0	0	152	0	0	0	0
Subtotal - Yadkin	DBB	52,051	5,390	14,494	38,705	49	95	24	7	18	0	19	9	0	0	0	0
Subtotal	DBB	130,174	22,442	29,177	66,371	717	173	134	1,892	2,579	2	158	4,925	43	31	86	205

	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
Subtotal - Broad	FD																
Subtotal - Cape Fear	FD	43,065	0	0	0	403	0	25	0	0	0	0	0	0	0	0	0
Subtotal - Catawba	FD	21,314	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Chowan	FD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - French Broad	FD	0															
Subtotal - Hiawassee	FD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Little Tennessee	FD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Lumber	FD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Neuse	FD	0	0	0	0	93	0	91	273	0	0	0	0	0	0	0	0
Subtotal - New	FD																
Subtotal - Pasquotank	FD																
Subtotal - Roanoke	FD	37,201	1,850	5,000	16,200	205	1	99	977	45	0	0	3,388	6	0	0	5
Subtotal - Savannah	FD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Tar-Pamlico	FD	6,500	0	0	0	75	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Watauga	FD																
Subtotal - White Oak	FD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Yadkin	FD	13,667	0	0	0	20	0	0	2	0	0	0	0	0	0	0	0
Subtotal	FD	121,747	1,850	5,000	16,200	795	1	215	1,252	45	0	0	3,388	6	0	0	5
Subtotal - Broad	MB																
Subtotal - Cape Fear	MB	0	0	0	0	0	0	0	0	160	0	0	0	0	0	0	0
Subtotal - Catawba	MB	3,500	0	0	0	5	5	1	0	0	0	0	0	0	0	0	0

	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
Subtotal - Chowan	MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - French Broad	MB	0															
Subtotal - Hiawassee	MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Little Tennessee	MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Lumber	MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Neuse	MB	21,375	0	0	0	273	0	135	902	1,478	0	1,984	652	0	0	0	0
Subtotal - New	MB																
Subtotal - Pasquotank	MB	0	0	0	0	0	0	0	0	11	0	0	19	0	0	0	0
Subtotal - Roanoke	MB	62,076	1,850	5,000	16,200	575	6	326	2,152	1,523	0	1,984	4,039	6	0	0	5
Subtotal - Savannah	MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Tar-Pamlico	MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Watauga	MB																
Subtotal - White Oak	MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Yadkin	MB	10,725	0	0	2,376	53	20	1	0	9	40	5	8	0	0	0	0
Subtotal	MB	97,676	1,850	5,000	18,576	906	31	462	3,054	3,180	40	3,974	4,718	6	0	0	5
Overall total - Broad																	
Overall total - Cape Fear		65,599	5,534	3,700	5,136	454	16	66	642	839	0	131	392	34	0	86	0
Overall total - Catawba		24,814	0	0	0	7	5	1	0	0	0	0	0	0	0	0	0
Overall total - Chowan		0	1,700	0	3,300	0	0	0	15	5	0	0	10	0	0	0	0

	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
Overall total - French Broad		5,000	0	0	0	0	0	16	0	0	0	0	0	0	0	0	0
Overall total - Hiawassee		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall - Little Tennessee		11,274	0	0	0	51	0	0	2	0	0	0	0	0	0	0	0
Overall total - Lumber		3,282	0	0	1,750	150	0	0	40	697	0	0	302	0	0	0	0
Overall total - Neuse		37,262	1,850	0	3,400	389	1	234	1,302	1,478	0	1,984	653	6	0	0	5
Overall total - New		0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0
Overall total - Pasquotank		4,400	0	0	0	212	0	21	50	834	0	6	139	0	31	0	181
Overall total - Roanoke		0	0	5,000	12,800	89	0	0	576	45	0	0	3,386	0	0	0	0
Overall total - Savannah		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall total - Tar-Pamlico		11,114	6,968	5,983	0	184	61	24	433	247	2	2	541	3	0	0	19
Overall total - Watauga		2,800	1,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall total - White Oak		8,332	0	0	1,280	32	0	2	2	65	0	0	152	0	0	0	0
Overall Total - Yadkin		76,443	5,390	14,494	41,081	122	115	24	9	27	40	24	17	0	0	0	0
Overall totals for NCDOT transfers		250,320	22,442	29,177	68,747	1,690	199	387	3,071	4,236	42	2,147	5,604	43	31	86	205

Appendix D: EEP Available Credits (Tier 1 Sites, Excluding NCDOT Transfers) as of February 22, 2007

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Appendix D summarizes the available mitigation generated by the Ecosystem Enhancement Program as of February 22, 2007. The available mitigation is presented by: river basin and eight-digit catalog unit (CU) and project type for how the mitigation was generated [traditional Design-Bid-Build (DBB), Full Delivery (FD) or Mitigation Bank (MB)]; and mitigation type (stream restoration, stream enhancement, etc.).

Exhibit D-1: EEP Available Credits (Tier 1 Sites, excluding NCDOT Transfers) – as of February 22, 2007

Total	8 Digit CU	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
Broad	3050105	DBB	8,500	5,000	0	2,500	2	0	0	0	0	0	0	0	0	0	0	0
		FD	43,163	1,410	10,076	6,064	9	0	0	0	5	0	0	0	0	0	0	0
		MB																
Subtotal - Broad		DBB	8,500	5,000	0	2,500	2	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Broad		FD	43,163	1,410	10,076	6,064	9	0	0	0	5	0	0	0	0	0	0	0
Subtotal - Broad		MB																
Overall total - Broad			51,663	6,410	10,076	8,564	11	0	0	0	5	0	0	0	0	0	0	0
Cape Fear	03030002	DBB	4,258	4,476	0	3,532	19	0	2	15	0	0	0	0	0	0	0	0
		FD	17,414	268	6,440	0	25	0	3	0	0	0	0	0	0	0	0	0
		MB																
	03030003	DBB	6,500	7,500	0	4,000	0	0	0	0	0	0	0	0	0	0	0	0
		FD	53,638															
		MB																
	03030004	DBB	3,000	0	0	0	14	0	20	0	15	0	0	0	0	0	0	0
		FD	33,625	0	800	150	29	0	40	43	13	0	0	0	0	0	0	0
		MB																
	03030005	DBB																
		FD																
		MB																
	03030006	DBB																
		FD																

Total	8 Digit CU	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
		MB																
	03030007	DBB	580	0	1,350	0	0	0	0	0	0	0	0	0	0	0	0	0
		FD	247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		MB																
Subtotal - Cape Fear		DBB	14,338	11,976	1,350	7,532	33	0	22	15	15	0	0	0	0	0	0	0
Subtotal - Cape Fear		FD	104,924	268	7,240	150	54	0	43	43	13	0	0	0	0	0	0	0
Subtotal - Cape Fear		MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall total - Cape Fear			119,262	12,244	8,590	7,682	87	0	66	58	28	0	0	0	0	0	0	0
Catawba	03050101	DBB																
		FD	12,186	1,155	0	1,009	6	0	1	4	0	0	0	0	0	0	0	0
		MB																
	03050102	DBB																
		FD																
		MB																
	03050103	DBB																
		FD																
		MB																
Subtotal - Catawba		DBB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Catawba		FD	12,186	1,155	0	1,009	6	0	1	4	0	0	0	0	0	0	0	0
Subtotal - Catawba		MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total	8 Digit CU	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
Overall total - Catawba			12,186	1,155	0	1,009	6	0	1	4	0	0	0	0	0	0	0	0
Chowan	03010201	DBB																
		FD																
		MB																
	03010202	DBB																
		FD																
		MB																
	03010203	DBB																
		FD	8,310	0	0	0	85	0	0	0	0	0	0	0	0	0	0	0
		MB																
	03010204	DBB																
		FD	2,818	0	0	2,786	12	0	0	0	0	0	0	0	0	0	0	0
		MB																
	03010205	DBB																
		FD																
		MB																
Subtotal - Chowan		DBB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Chowan		FD	11,128	0	0	2,786	97	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Chowan		MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall total - Chowan			11,128	0	0	2,786	97	0	0	0	0	0	0	0	0	0	0	0

Total	8 Digit CU	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
French Broad	06010105	DBB	38,673	6,600	800	0	2	0	0	0	0	0	0	0	0	0	0	0
		FD																
		MB																
	06010106	DBB																
		FD	4,857	0	0	715	5	0	0	0	0	0	0	0	0	0	0	0
		MB																
	06010108	DBB	1,500	1,250	0	2,000	0	0	0	0	0	0	0	0	0	0	0	0
		FD	2,410	1,235	80	0	0	0	0	0	0	0	0	0	0	0	0	0
		MB																
Subtotal - French Broad		DBB	40,173	7,850	800	2,000	2	0	0	0	0	0	0	0	0	0	0	0
Subtotal - French Broad		FD	4,857	0	0	715	5	0	0	0	0	0	0	0	0	0	0	0
Subtotal - French Broad		MB	0															
Overall total - French Broad			45,030	7,850	800	2,715	7	0	0	0	0	0	0	0	0	0	0	0
Hiawassee	06020002	DBB																
		FD																
		MB																
	06020003	DBB																
		FD																
		MB																

Total	8 Digit CU	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
Subtotal - Hiawassee		DBB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Hiawassee		FD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Hiawassee		MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall total - Hiawassee			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Tennessee	06010202	DBB																
		FD																
		MB																
	06010203	DBB																
		FD	3,212	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		MB																
	06010204	DBB																
		FD																
		MB																
Subtotal - Little Tennessee		DBB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Little Tennessee		FD	3,212	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Little Tennessee		MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total	8 Digit CU	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
Overall total - Little Tennessee				3,212	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lumber	03040203	DBB	6,888	0	0	0	15	0	23	0	0	0	0	0	0	0	0	0
		FD	682	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		MB																
	03040204	DBB																
		FD	5,000	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0
		MB																
	03040205	DBB																
		FD																
		MB																
	03040206	DBB																
		FD																
		MB																
	03040207	DBB																
		FD	0	0	0	0	0	0	0	0	72	0	0	0	0	0	0	0
		MB																
Subtotal - Lumber		DBB	6,888	0	0	0	15	0	23	0	0	0	0	0	0	0	0	0
Subtotal - Lumber		FD	5,682	0	0	0	5	0	0	0	72	0	0	0	0	0	0	0
Subtotal - Lumber		MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall total - Lumber			12,570	0	0	0	20	0	23	0	72	0	0	0	0	0	0	0

Total	8 Digit CU	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
Neuse	03020201	DBB	0	0	0	0	0	0	0	18	0	0	0	0	0	0	0	0
		FD	0	0	0	0	16.19	0.00	0.00	0.00	4.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		MB																
	03020202	DBB																
		FD																
		MB																
	03020203	DBB	1,291	2,830	0	0	0	0	5	43	0	0	0	0	0	0	0	0
		FD																
		MB																
	03020204	DBB																
		FD																
		MB																
Subtotal - Neuse		DBB	1,291	2,830	0	0	0	0	5	61	0	0	0	0	0	0	0	0
Subtotal - Neuse		FD	0	0	0	0	16	0	0	0	4	0	0	0	0	0	0	0
Subtotal - Neuse		MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall total - Neuse			1,291	2,830	0	0	16	0	5	61	4	0	0	0	0	0	0	0
New	05050001	DBB	9,015	15,060	500	12,250	7	6	9	18	0	0	0	0	0	0	0	0
		FD																
		MB																
Subtotal - New		DBB	9,015	15,060	500	12,250	7	6	9	18	0	0	0	0	0	0	0	0
Subtotal - New		FD																

Total	8 Digit CU	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
Subtotal - New		MB																
Overall total - New			9,015	15,060	500	12,250	7	6	9	18	0	0	0	0	0	0	0	0
Pasquotank	03020105	DBB	0	2,500	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		FD	4,980	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		MB	4,928	0	0	0	180	0	0	0	274	0	0	0	0	0	0	0
Subtotal - Pasquotank		DBB	0	2,500	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Pasquotank		FD	4,980	0	0	0	16	0	0	0	16	0	0	0	0	0	0	0
Subtotal - Pasquotank		MB	4,928	0	0	0	180	0	0	0	274	0	0	0	0	0	0	0
Overall total - Pasquotank			9,908	2,500	0	0	195	0	0	0	290	0	0	0	0	0	0	0
Roanoke	03010102	DBB																
		FD																
		MB																
	03010103	DBB																
		FD	9,366	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		MB																
	03010104	DBB																
		FD	12,720	1,232	3,499	463	0	0	0	0	0	0	0	0	0	0	0	0
		MB																
	03010106	DBB																
		FD	5,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		MB																

Total	8 Digit CU	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
	03010107	DBB																
		FD	12,847	0	0	0	56	0	0	0	82	0	0	0	0	0	0	0
		MB																
Subtotal - Roanoke		DBB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Roanoke		FD	39,933	1,232	3,499	463	56	0	0	0	82	0	0	0	0	0	0	0
Subtotal - Roanoke		MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall total - Roanoke			39,933	1,232	3,499	463	56	0	0	0	82	0	0	0	0	0	0	0
Savannah	03060101	DBB																
		FD	3,310	1,600	0	3,115	0	0	0	0	0	0	0	2	0	0	0	0
		MB																
	03060102	DBB																
		FD																
		MB																
Subtotal - Savannah		DBB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Savannah		FD	3,310	1,600	0	3,115	0	0	0	0	0	0	0	2	0	0	0	0
Subtotal - Savannah		MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall total - Savannah			3,310	1,600	0	3,115	0	0	0	0	0	0	0	2	0	0	0	0
Tar-Pamlico	03020101	DBB	549	2,295	0	0	0	3	0	0	0	0	0	0	0	0	0	0

Total	8 Digit CU	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
		FD	8,238	0	0	0	6	0	5	7	16	0	1	0	0	0	0	0
		MB																
	03020102	DBB																
		FD	0	0	0	0	12	0	7	0	0	0	0	0	0	0	0	0
		MB																
	03020103	DBB																
		FD																
		MB																
	03020104	DBB																
		FD	0	0	0	0	30	0	0	0	30	0	0	0	0	0	0	0
		MB																
	03020105	DBB																
		FD	0	0	0	0	16	0	0	0	16	0	0	0	0	0	0	0
		MB																
Subtotal - Tar-Pamlico		DBB	549	2,295	0	0	0	3	0	0	0	0	0	0	0	0	0	0
Subtotal - Tar-Pamlico		FD	8,238	0	0	0	64	0	12	7	62	0	1	0	0	0	0	0
Subtotal - Tar-Pamlico		MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall total - Tar Pamlico			8,787	2,295	0	0	64	3	12	7	62	0	1	0	0	0	0	0
Watauga	06010103	DBB			0	0	0	0	0	0	0	0	0	0	0	0	0	0
		FD																
		MB																

Total	8 Digit CU	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
Overall - Watauga			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White Oak	03020106	DBB																
		FD																
		MB																
	03030001	DBB	849	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		FD	8,497	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
		MB	0	0	0	0	0	0	0	0	26	0	0	0	0	0	0	0
Subtotal - White Oak		DBB	849	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - White Oak		FD	8,497	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
Subtotal - White Oak		MB	0	0	0	0	0	0	0	0	26	0	0	0	0	0	0	0
Overall total - White Oak			9,346	0	0	0	3	0	0	0	26	0	0	0	0	0	0	0
Yadkin	03040101	DBB	12,997	1,221	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		FD																
		MB																
	03040102	DBB																
		FD																
		MB																
	03040103	DBB	2,463	3,500	0	0	0	2	1	0	0	0	3	0	0	0	0	0
		FD																
		MB																
	03040104	DBB																
		FD																

Total	8 Digit CU	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
		MB																
	03040105	DBB																
		FD	33,076	0	1,090	580	0	0	0	0	0	0	0	0	0	0	0	0
		MB																
	03040106	DBB																
		FD																
		MB																
	03040201	DBB																
		FD	6,440	656	6,550	5,150	41	0	5	20	0	0	0	0	0	0	0	0
		MB																
	03040202	DBB																
		FD																
		MB																
Subtotal - Yadkin		DBB	15,460	4,721	0	0	0	2	1	0	0	0	3	0	0	0	0	0
Subtotal - Yadkin		FD	39,516	656	7,640	5,730	41	0	5	20	0	0	0	0	0	0	0	0
Subtotal - Yadkin		MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall total - Yadkin			54,976	5,377	7,640	5,730	41	2	6	20	0	0	3	0	0	0	0	0

Appendix E: EEP Available Credits (Tier 1 Sites, Excluding NCDOT Transfers) as of February 22, 2007 per Basin Subtotal

■

Appendix E summarizes all the mitigation credits available to the Ecosystem Enhancement Program and noted indiscriminate of the mitigation source. The mitigation credit is noted by river basin and project delivery type for how the mitigation was generated [traditional Design-Bid-Build (DBB), Full Delivery (FD) or Mitigation Bank (MB)]; and mitigation type (stream restoration, stream enhancement, etc.).

Exhibit E-1: EEP Available Credits (Tier 1 Sites, excluding NCDOT Transfers) – as of February 22, 2007

Total	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
Subtotal - Broad	DBB	8,500	5,000	0	2,500	2	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Cape Fear	DBB	14,338	11,976	1,350	7,532	33	0	22	15	15	0	0	0	0	0	0	0
Subtotal - Catawba	DBB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Chowan	DBB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - French Broad	DBB	40,173	7,850	800	2,000	2	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Hiawassee	DBB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Little Tennessee	DBB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Lumber	DBB	6,888	0	0	0	15	0	23	0	0	0	0	0	0	0	0	0
Subtotal - Neuse	DBB	1,291	2,830	0	0	0	0	5	61	0	0	0	0	0	0	0	0
Subtotal - New	DBB	9,015	15,060	500	12,250	7	6	9	18	0	0	0	0	0	0	0	0
Subtotal - Pasquotank	DBB	0	2,500	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Roanoke	DBB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Savannah	DBB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Tar-Pamlico	DBB	549	2,295	0	0	0	3	0	0	0	0	0	0	0	0	0	0
Subtotal - White Oak	DBB	849	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Yadkin	DBB	15,460	4,721	0	0	0	2	1	0	0	0	3	0	0	0	0	0

Total	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
Subtotal - DBB	DBB	97,063	52,232	2,650	24,282	60	11	60	94	15	0	3	0	0	0	0	0
Subtotal - Broad	FD	43,163	1,410	10,076	6,064	9	0	0	0	5	0	0	0	0	0	0	0
Subtotal - Cape Fear	FD	104,924	268	7,240	150	54	0	43	43	13	0	0	0	0	0	0	0
Subtotal - Catawba	FD	12,186	1,155	0	1,009	6	0	1	4	0	0	0	0	0	0	0	0
Subtotal - Chowan	FD	11,128	0	0	2,786	97	0	0	0	0	0	0	0	0	0	0	0
Subtotal - French Broad	FD	7,267															
Subtotal - Hiawassee	FD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Little Tennessee	FD	3,212	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Lumber	FD	5,682	0	0	0	5	0	0	0	72	0	0	0	0	0	0	0
Subtotal - Neuse	FD	0	0	0	0	16	0	0	0	4	0	0	0	0	0	0	0
Subtotal - New	FD																
Subtotal - Pasquotank	FD	4,980	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Roanoke	FD	39,933	1,232	3,499	463	56	0	0	0	82	0	0	0	0	0	0	0
Subtotal - Savannah	FD	3,310	1,600	0	3,115	0	0	0	0	0	0	0	2	0	0	0	0
Subtotal - Tar-Pamlico	FD	8,238	0	0	0	64	0	12	7	62	0	1	0	0	0	0	0
Subtotal - White Oak	FD	8,497	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Yadkin	FD	39,516	656	7,640	5,730	41	0	5	20	0	0	0	0	0	0	0	0
Subtotal - FD	FD	292,036	6,321	28,455	19,317	351	0	61	74	238	0	1	2	0	0	0	0

Total	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
Subtotal - Broad	MB																
Subtotal - Cape Fear	MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Catawba	MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Chowan	MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - French Broad	MB	0															
Subtotal - Hiawassee	MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Little Tennessee	MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Lumber	MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - MB	MB	402,192	9,809	39,594	28,625	536	0	77	101	458	0	1	3	0	0	0	0
Subtotal - Neuse	MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - New	MB																
Subtotal - Pasquotank	MB	4,928	0	0	0	180	0	0	0	274	0	0	0	0	0	0	0
Subtotal - Roanoke	MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Savannah	MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Tar-Pamlico	MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - White Oak	MB	0	0	0	0	0	0	0	0	26	0	0	0	0	0	0	0
Subtotal - Yadkin	MB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal-MB	MB	407,120	9809	39594	28625	715.6414	0	76.67	100.6	757.823	0	1.4	3.42	0	0	0	0

Total	Project Type (DBB, FD, MB)	Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Non-Riparian Restoration	Non-Riparian Creation	Non-Riparian Enhancement	Non-Riparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
Overall total - Broad		51,663	6,410	10,076	8,564	11	0	0	0	5	0	0	0	0	0	0	0
Overall total - Cape Fear		131,784	13,046	9,340	7,682	87	0	66	58	28	0	0	0	0	0	0	0
Overall total - Catawba		12,186	1,155	0	1,009	6	0	1	4	0	0	0	0	0	0	0	0
Overall total - Chowan		11,128	0	0	2,786	97	0	0	0	0	0	0	0	0	0	0	0
Overall total - French Broad		47,440	7,850	800	2,000	2	0	0	0	0	0	0	0	0	0	0	0
Overall total - Hiawassee		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall total - Little Tennessee		3,212	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall total - Lumber		12,570	0	0	0	20	0	23	0	72	0	0	0	0	0	0	0
Overall total - Neuse		1,291	2,830	0	0	16	0	5	61	4	0	0	0	0	0	0	0
Overall total - New		9,015	15,060	500	12,250	7	6	9	18	0	0	0	0	0	0	0	0
Overall total - Pasquotank		9,908	2,500	0	0	195	0	0	0	290	0	0	0	0	0	0	0
Overall total - Roanoke		39,933	1,232	3,499	463	56	0	0	0	82	0	0	0	0	0	0	0
Overall total - Savannah		3,310	1,600	0	3,115	0	0	0	0	0	0	0	2	0	0	0	0
Overall total - Tar Pamlico		8,787	2,295	0	0	48	3	12	7	46	0	1	0	0	0	0	0
Overall total - White Oak		9,346	0	0	0	3	0	0	0	26	0	0	0	0	0	0	0
Overall total - Yadkin		54,976	5,377	7,640	5,730	41	2	6	20	0	0	3	0	0	0	0	0
Overall - EEP Tier 1 Sites		406,549	59,355	31,855	43,599	591	11	121	168	553	0	4	2	0	0	0	0

Appendix F: Anticipated NCDOT Impacts

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Each February, the NCDOT submits its revised impacts to wetlands and streams for the Transportation Improvement Program. The projected impacts are divided by MOA year (fiscal year) for the impacts and then divided into the river basin of the impacts, the hydrologic unit where the impacts will occur, and the type of impact (stream, riparian wetland, non-riparian wetland and coastal marsh). For Year 10 (July 2012 to June 2013), the EEP did not have the complete impact data. Additionally, the impact data for Years 11 (July 2013 to June 2014), Year 12 (July 2014 to June 2015), Year 13 (July 2015 to June 2016), Year 14 (July 2016 to July 2017) and Year 15 (July 2017 to June 2018) of the MOA have not been identified. The EEP must institute impacts for: Year 11 (July 2013 to June 2014) and Year 13 (July 2015 to June 2016) by the end of Year 8 (June 2011); Year 12 (July 2014 to June 2015) and Year 14 (July 2016 to July 2017) by Year 9 (June 2012); and, Year 15 (July 2017 to June 2018) by Year 10 (June 2013). EEP provides NCDOT's mitigation in advance, and the MOA signed by NCDOT, NCDENR and USACE states :impacts for Year 11 (July 2013 to June 2014) and 13 (July 2015 to June 2016) must have mitigation instituted by the end of Year 8 (June 2011); impacts for Year 12 (July 2014 to June 2015) and Year 14 (July 2016 to July 2017) must have mitigation instituted by the end of Year 9 (June 2012); and, impacts for Year 15 (July 2017 to June 2018) must have mitigation instituted by the end of by Year 10 (June 2013).

Exhibit F-1: Anticipated NCDOT Impacts

Earliest MOA Year		July 2006-July 2007				July 2007-July 2008				July 2008-July 2009				July 2009-July 2010			
River Basin	CU	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh
Broad		**385**	**0.23**			**14,071**	**0.26**	**1.46**		**340**	**0.14**			**18,540**	**1.49**	**0.77**	
	03050105	385	0.23			14,071	0.26	1.46		340	0.14			18,540	1.49	0.77	
Cape Fear		**1,109**	**1.14**	**1.48**		**39,354**	**68.60**	**31.93**		**7,245**	**42.00**	**42.28**		**16,787**	**55.26**	**60.30**	
	03030002	634	0.22	0.35		17,736	15.77	7.32		3,532	1.02	0.08		13,374	12.10	19.80	
	03030003	82	0.03	0.05		4,782	0.05	0.41		963	8.22	0.05		2,240	1.82	0.05	
	03030004	80	0.11	0.18		16,471	51.38	13.45		629	1.80	0.27		80	0.57	0.29	
	03030005	195	0.15	0.29		247	0.65	7.34		45	0.15	0.15		975	40.24	39.56	
	03030006	54	0.45	0.37		54	0.19	0.34		2,012	30.70	41.49		54	0.19	0.34	
	03030007	64	0.18	0.24		64	0.56	3.07		64	0.11	0.24		64	0.36	0.26	
Catawba		**700**	**0.24**	**0.03**		**2,350**	**0.46**	**0.23**		**2,551**	**0.24**	**0.45**		**370**	**0.24**	**0.03**	
	03050101	628	0.13	0.03		1,774	0.35	0.03		2,479	0.13	0.45		298	0.13	0.03	
	03050102	50	0.10			254	0.10			50	0.10			50	0.10		
	03050103	22	0.01			322	0.01	0.20		22	0.01			22	0.01		
Chowan		**291**	**0.08**	**0.05**		**70**	**0.03**	**0.05**		**70**	**0.03**	**0.05**		**70**	**0.03**	**0.05**	
	03010203	30	0.05	0.04		30	0.02	0.04		30	0.02	0.04		30	0.02	0.04	
	03010204	261	0.03	0.01		40	0.01	0.01		40	0.01	0.01		40	0.01	0.01	
French Broad		**4,676**	**0.58**	**0.56**		**15,000**	**1.24**	**0.03**		**1,091**	**0.36**	**0.01**		**1,425**	**0.32**	**0.11**	
	06010105	511	0.11			1,251	0.11			500	0.11			735	0.11		
	06010106	995	0.01			200	0.01			361	0.14			460	0.10	0.11	
	06010108	3,170	0.46	0.56		13,549	1.12	0.03		230	0.11	0.01		230	0.11	0.01	

Earliest MOA Year		July 2006-July 2007				July 2007-July 2008				July 2008-July 2009				July 2009-July 2010			
River Basin	CU	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh
Hiwassee		**570**	**0.01**	**1.33**		**1,426**	**0.10**			**400**	**0.01**			**200**	**0.01**		
	06020002	570	0.01	1.33		1,426	0.10			400	0.01			200	0.01		
Little Tennessee		**2,133**	**0.03**			**880**	**0.03**			**1,341**	**0.20**			**32,334**	**0.03**	**1.84**	
	06010202	1,633	0.01			480	0.01			881	0.03			8,171	0.01	0.46	
	06010203	300	0.01			100	0.01			360	0.12			200	0.01		
	06010204	200	0.01			300	0.01			100	0.05			23,963	0.01	1.38	
Lumber		**1,135**	**5.52**	**2.29**		**1,145**	**1.20**	**1.21**		**1,110**	**8.83**	**8.81**		**6,555**	**8.65**	**17.15**	
	03040203	35	3.34	1.99		35	0.30	0.75		1,055	8.43	2.40		6,500	8.43	16.85	
	03040204	95	0.03	0.05		15	0.22	0.05		15	0.20	0.27		15	0.02	0.05	
	03040206	985	2.10	0.15		80	0.37	0.31		20	0.15	6.05		20	0.15	0.15	
	03040207	20	0.05	0.10		1,015	0.31	0.10		20	0.05	0.10		20	0.05	0.10	
Neuse		**11,203**	**17.92**	**10.87**	**0.01**	**9,060**	**24.31**	**23.49**	**0.01**	**660**	**0.29**	**0.57**	**0.01**	**1,145**	**21.05**	**37.08**	**0.01**
	03020201	1,508	4.75	0.84		5,888	11.33	3.03		543	0.14	0.35		451	0.08	0.35	
	03020202	9,219	12.91	7.89		2,229	2.22	9.13	0.00	25	0.05	0.06		25	0.05	0.06	
	03020203	72	0.24	0.15		192	0.08	0.15		72	0.07	0.15		72	0.40	0.15	
	03020204	404	0.03	2.00	0.01	751	10.69	11.18	0.01	20	0.03	0.01	0.01	597	20.52	36.52	0.01
New		**160**	**0.11**	**0.10**		**565**	**0.10**	**0.12**		**1,845**	**0.30**	**0.30**		**576**	**0.21**	**0.12**	
	05050001	160	0.11	0.10		565	0.10	0.12		1,845	0.30	0.30		576	0.21	0.12	
Pasquotank		**20**	**0.43**	**0.01**	**0.00**	**301**	**0.11**	**2.88**	**1.30**	**20**	**0.13**	**14.63**	**0.10**	**1,456**	**5.13**	**0.80**	**0.00**
	03010205	20	0.43	0.01	0.00	301	0.11	2.88	1.30	20	0.13	14.63	0.10	1,456	5.13	0.80	0.00

Earliest MOA Year		July 2006-July 2007				July 2007-July 2008				July 2008-July 2009				July 2009-July 2010			
River Basin	CU	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh
Roanoke		**503**	**1.20**	**0.37**		**518**	**0.63**	**0.34**		**279**	**0.46**	**0.34**		**6,340**	**2.17**	**0.34**	
	03010102	40		0.03		40	0.14	0.03		40		0.03		40		0.03	
	03010103	266	0.05			138	0.05			42	0.17			5,703	0.53		
	03010104	72	0.51	0.06		72	0.00	0.03		72	0.00	0.03		72	0.00	0.03	
	03010106	78	0.21	0.11		78	0.02	0.11		78	0.02	0.11		78	0.02	0.11	
	03010107	47	0.43	0.17		190	0.41	0.17		47	0.26	0.17		447	1.61	0.17	
Savannah		**450**	**0.02**			**0**	**0.02**			**50**	**0.02**			**50**	**0.02**		
	03060101	100	0.01			0	0.01			50	0.01			50	0.01		
	03060102	350	0.01			0	0.01			0	0.01			0	0.01		
Tar-Pamlico		**712**	**0.57**	**0.58**	**4.84**	**2,481**	**3.53**	**1.75**	**0.04**	**839**	**0.24**	**0.54**	**0.04**	**660**	**0.45**	**0.84**	**0.04**
	03020101	291	0.42	0.26		1,943	0.68	1.43		441	0.03	0.22		291	0.29	0.52	
	03020102	263	0.03	0.19		291	0.49	0.19		240	0.08	0.19		211	0.03	0.19	
	03020103	48	0.05	0.09		137	2.29	0.09		48	0.05	0.09		48	0.05	0.09	
	03020104	50	0.03	0.02	0.03	50	0.03	0.02	0.03	50	0.03	0.02	0.03	50	0.03	0.02	0.03
	03020105	60	0.04	0.02	4.81	60	0.04	0.02	0.01	60	0.04	0.02	0.01	60	0.04	0.02	0.01
Watauga		**25**	**0.10**	**0.10**		**520**	**0.10**	**0.10**		**95**	**0.10**	**0.10**		**95**	**0.10**	**0.10**	
	06010103	25	0.10	0.10		520	0.10	0.10		95	0.10	0.10		95	0.10	0.10	
White Oak		**80**	**0.13**	**0.20**	**0.03**	**103**	**0.17**	**0.20**	**0.03**	**180**	**0.32**	**0.29**	**0.03**	**6,511**	**8.58**	**56.10**	**0.03**
	03020106	40	0.08	0.10	0.03	40	0.08	0.10	0.03	40	0.08	0.10	0.03	2,226	0.99	49.35	0.03
	03030001	40	0.05	0.10		63	0.09	0.10		140	0.24	0.19		4,285	7.60	6.76	
Yadkin		**2,986**	**3.66**	**0.30**		**7,381**	**3.81**	**1.84**		**7,107**	**1.11**	**0.19**		**28,038**	**4.23**	**0.24**	
	03040101	394	0.88	0.04		381	0.29	0.04		312	0.05	0.04		26,560	3.64	0.04	
	03040102	1,350	0.01	0.01		4,029	1.75	1.60		125	0.02	0.01		125	0.02	0.01	

Earliest MOA Year		July 2006-July 2007				July 2007-July 2008				July 2008-July 2009				July 2009-July 2010			
River Basin	CU	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh
	03040103	453	1.10	0.05		76	0.07	0.03		20	0.03	0.03		20	0.03	0.03	
	03040104	433	0.03	0.03		66	0.03	0.03		66	0.03	0.03		1,124	0.43	0.08	
	03040105	328	1.63	0.12		2,801	1.65	0.10		6,556	0.96	0.04		181	0.09	0.04	
	03040201	28	0.02	0.05		28	0.02	0.05		28	0.02	0.05		28	0.02	0.05	
Grand Total		**27,138**	**31.95**	**18.27**	**4.88**	**95,225**	**104.70**	**65.63**	**1.38**	**25,223**	**54.76**	**68.56**	**0.18**	**121,152**	**107.96**	**175.87**	**0.08**

Earliest MOA Year		July 2010-July 2011				July 2011-July 2012				July 2012-July 2013							
River Basin	CU	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh	Total Sum of Stream	Total Sum of Riparian Wetlands	Total Sum of Non-Riparian Wetlands	Total Sum of Coastal Marsh
Broad		**150**	**0.11**			**11,376**	**0.11**			**250**	**0.11**			**45,112**	**2.45**	**2.24**	
	03050105	150	0.11			11,376	0.11			250	0.11			45,112	2.45	2.24	
Cape Fear		**28,334**	**8.34**	**27.49**		**8,053**	**8.69**	**2.10**		**417**	**0.60**	**1.04**		**101,299**	**184.62**	**166.62**	
	03030002	5,212	0.49	0.12		7,511	4.38	0.78		92	0.03	0.08		48,091	34.01	28.54	
	03030003	12,200	0.55	0.49		82	0.02	0.05		82	0.02	0.05		20,431	10.69	1.15	
	03030004	3,862	2.16	22.39		80	0.11	0.18		80	0.11	0.18		21,282	56.24	36.95	
	03030005	45	0.20	0.15		262	3.89	0.51		45	0.15	0.15		1,814	45.42	48.15	
	03030006	6,951	4.70	4.10		54	0.19	0.34		54	0.19	0.34		9,233	36.59	47.32	
	03030007	64	0.23	0.24		64	0.11	0.24		64	0.11	0.24		448	1.66	4.52	

Earliest MOA Year		July 2010-July 2011				July 2011-July 2012				July 2012-July 2013							
River Basin	CU	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh	Total Sum of Stream	Total Sum of Riparian Wetlands	Total Sum of Non-Riparian Wetlands	Total Sum of Coastal Marsh
Catawba		**270**	**0.24**	**0.03**		**7,392**	**3.50**	**2.06**		**370**	**0.24**	**0.03**		**14,003**	**5.15**	**2.86**	
	03050101	198	0.13	0.03		3,292	0.34	0.34		298	0.13	0.03		8,967	1.34	0.94	
	03050102	50	0.10			50	0.10			50	0.10			554	0.70		
	03050103	22	0.01			4,050	3.06	1.72		22	0.01			4,482	3.10	1.92	
Chowan		**1,645**	**39.37**	**41.56**		**70**	**0.03**	**0.05**		**70**	**0.03**	**0.05**		**2,286**	**39.60**	**41.86**	
	03010203	234	38.02	37.04		30	0.02	0.04		30	0.02	0.04		414	38.17	37.28	
	03010204	1,411	1.35	4.52		40	0.01	0.01		40	0.01	0.01		1,872	1.43	4.58	
French Broad		**8,324**	**1.75**	**0.01**		**7,068**	**0.28**	**0.01**		**930**	**0.23**	**0.01**		**38,514**	**4.74**	**0.72**	
	06010105	7,794	1.63			6,538	0.16			400	0.11			17,729	2.34		
	06010106	300	0.01			300	0.01			300	0.01			2,916	0.29	0.11	
	06010108	230	0.11	0.01		230	0.11	0.01		230	0.11	0.01		17,869	2.10	0.61	
Hiwassee		**200**	**0.01**			**200**	**0.01**			**200**	**0.01**			**3,196**	**0.16**	**1.33**	
	06020002	200	0.01			200	0.01			200	0.01			3,196	0.16	1.33	
Little Tennessee		**3,125**	**0.03**			**450**	**0.03**			**450**	**0.03**			**40,713**	**0.38**	**1.84**	
	06010202	200	0.01			200	0.01			200	0.01			11,765	0.09	0.46	
	06010203	480	0.01			200	0.01			200	0.01			1,840	0.18		
	06010204	2,445	0.01			50	0.01			50	0.01			27,108	0.11	1.38	
Lumber		**135**	**3.97**	**1.45**		**455**	**3.66**	**1.94**		**90**	**0.34**	**0.45**		**10,625**	**32.18**	**33.30**	
	03040203	35	0.12	0.15		35	0.12	0.15		35	0.12	0.15		7,730	20.87	22.44	
	03040204	60	3.65	0.05		15	0.02	0.05		15	0.02	0.05		230	4.16	0.57	
	03040206	20	0.15	0.15		20	0.15	0.15		20	0.15	0.15		1,165	3.22	7.11	
	03040207	20	0.05	1.10		385	3.37	1.59		20	0.05	0.10		1,500	3.93	3.19	

Earliest MOA Year		July 2010-July 2011				July 2011-July 2012				July 2012-July 2013							
River Basin	CU	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh	Total Sum of Stream	Total Sum of Riparian Wetlands	Total Sum of Non-Riparian Wetlands	Total Sum of Coastal Marsh
Neuse		**7,601**	**1.38**	**1.25**	**0.01**	**568**	**0.59**	**0.57**	**0.01**	**568**	**0.19**	**0.57**	**0.01**	**30,805**	**65.73**	**74.40**	**0.07**
	03020201	7,484	1.25	1.03		451	0.45	0.35		451	0.06	0.35		16,776	18.05	6.30	
	03020202	25	0.05	0.06		25	0.05	0.06		25	0.05	0.06		11,573	15.35	17.32	0.00
	03020203	72	0.06	0.15		72	0.06	0.15		72	0.06	0.15		624	0.97	1.05	
	03020204	20	0.03	0.01	0.01	20	0.03	0.01	0.01	20	0.03	0.01	0.01	1,832	31.36	49.74	0.07
New		**315**	**0.10**	**0.10**		**5,955**	**4.20**	**6.10**		**315**	**0.10**	**0.10**		**9,731**	**5.12**	**6.94**	
	05050001	315	0.10	0.10		5,955	4.20	6.10		315	0.10	0.10		9,731	5.12	6.94	
Pasquotank		**1,020**	**1.38**	**4.58**	**0.00**	**123**	**0.60**	**4.13**	**0.00**	**20**	**0.02**	**0.01**	**0.00**	**2,960**	**7.79**	**27.04**	**1.41**
	03010205	1,020	1.38	4.58	0.00	123	0.60	4.13	0.00	20	0.02	0.01	0.00	2,960	7.79	27.04	1.41
Roanoke		**936**	**3.35**	**0.35**		**6,968**	**3.30**	**0.66**		**279**	**0.14**	**0.34**		**15,823**	**11.24**	**2.74**	
	03010102	40		0.03		40		0.03		40		0.03		280	0.14	0.21	
	03010103	42	0.01			42	0.01			42	0.01			6,275	0.84		
	03010104	72	0.00	0.03		6,761	3.16	0.35		72	0.00	0.03		7,193	3.69	0.56	
	03010106	78	0.24	0.12		78	0.02	0.11		78	0.02	0.11		546	0.56	0.79	
	03010107	704	3.10	0.17		47	0.10	0.17		47	0.10	0.17		1,529	6.01	1.19	
Savannah		**50**	**0.02**			**50**	**0.02**			**50**	**0.02**			**700**	**0.14**		
	03060101	50	0.01			50	0.01			50	0.01			350	0.07		
	03060102	0	0.01			0	0.01			0	0.01			350	0.07		
Tar-Pamlico		**2,640**	**10.86**	**3.79**	**0.04**	**660**	**0.30**	**0.54**	**0.04**	**660**	**0.19**	**0.54**	**0.04**	**8,652**	**16.14**	**8.58**	**5.09**
	03020101	2,271	10.55	3.47		291	0.03	0.22		291	0.03	0.22		5,819	12.03	6.33	
	03020102	211	0.18	0.19		211	0.15	0.19		211	0.03	0.19		1,638	1.00	1.33	
	03020103	48	0.05	0.09		48	0.05	0.09		48	0.05	0.09		425	2.61	0.63	

Earliest MOA Year		July 2010-July 2011				July 2011-July 2012				July 2012-July 2013							
River Basin	CU	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh	Stream (feet)	Riparian Wetlands (acres)	Non-Riparian Wetlands (acres)	Coastal Marsh	Total Sum of Stream	Total Sum of Riparian Wetlands	Total Sum of Non-Riparian Wetlands	Total Sum of Coastal Marsh
	03020104	50	0.03	0.02	0.03	50	0.03	0.02	0.03	50	0.03	0.02	0.03	350	0.24	0.14	0.21
	03020105	60	0.04	0.02	0.01	60	0.04	0.02	0.01	60	0.04	0.02	0.01	420	0.27	0.15	4.88
Watauga		**95**	**0.10**	**0.10**		**95**	**0.10**	**0.10**		**95**	**0.10**	**0.10**		**1,020**	**0.70**	**0.70**	
	06010103	95	0.10	0.10		95	0.10	0.10		95	0.10	0.10		1,020	0.70	0.70	
White Oak		**80**	**0.13**	**0.20**	**0.03**	**80**	**0.13**	**0.20**	**0.03**	**80**	**0.13**	**0.20**	**0.03**	**7,114**	**9.59**	**57.40**	**0.21**
	03020106	40	0.08	0.10	0.03	40	0.08	0.10	0.03	40	0.08	0.10	0.03	2,466	1.47	49.95	0.21
	03030001	40	0.05	0.10		40	0.05	0.10		40	0.05	0.10		4,648	8.13	7.45	
Yadkin		**29,977**	**17.17**	**48.80**		**27,321**	**3.77**	**3.72**		**540**	**0.24**	**0.19**		**103,350**	**33.97**	**55.27**	
	03040101	215	0.05	0.04		1,461	0.18	0.19		215	0.05	0.04		29,538	5.14	0.43	
	03040102	125	0.02	0.01		125	0.02	0.01		125	0.02	0.01		6,004	1.83	1.64	
	03040103	11,887	0.63	0.52		3,178	0.17	0.03		20	0.03	0.03		15,654	2.06	0.72	
	03040104	14,142	1.45	1.02		4,087	0.03	0.78		66	0.03	0.03		19,984	2.01	1.98	
	03040105	86	0.13	0.04		18,340	3.36	2.67		86	0.09	0.04		28,378	7.90	3.03	
	03040201	3,522	14.90	47.17		130	0.02	0.05		28	0.02	0.05		3,792	15.04	47.47	
Grand Total		**84,897**	**88.31**	**129.71**	**0.08**	**76,884**	**29.31**	**22.18**	**0.08**	**5,384**	**2.70**	**3.62**	**0.08**	**435,903**	**419.67**	**483.84**	**6.78**

Appendix G: EEP Targets and Surplus Identified from June 2007 to June 2013

■

Using the NCDOT impacts data, the EEP makes projections of the mitigation 'targets' (i.e., mitigation needed) for a particular river basin catalog unit (CU). According to the February 2007 data that EEP provided to Dye Management, Appendix G shows the potential surplus mitigation that EEP will have generated by the end of June 2013 (end of Year 10 in the MOA) as it will have met the current expected NCDOT impact needs through Year 10. EEP will have more than instituted sufficient mitigation by the end of Year 10 (June 2013) for basins with positive numbers in the 'potential surplus' column for that mitigation type. This means that EEP will more than meet NCDOT's mitigation projections for permitting needs for that mitigation type. However, EEP must also provide for NCDOT permitting needs for Year 11 (July 2013 to June 2014), Year 12 (July 2014 to June 2015), Year 13 (July 2015 to June 2016), Year 14 (July 2016 to July 2017) and Year 15 (July 2017 to June 2018) by Year 10 (ending June 30, 2013). At the time EEP provided this information to Dye Management, the wetland and stream impacts for permitting needs for Years 11, 12, 13, 14 and 15 had not been identified, and the Year 10 data was limited. Therefore, the mitigation may not in fact be "surplus."

Exhibit G-1: 'Surplus' by June 30, 2010 (Year 7)

Basin	CU	Stream Restoration Mitigation Projection	Stream Restoration Mitigation Equivalent	potential surplus	Riparian Restoration Mitigation Projection	Riparian Restoration Equivalent Projection	potential surplus	Nonriparian Restoration Projection	Nonriparian Restoration Equivalent Projection	potential surplus	Coastal Marsh Restoration Projection	Coastal Marsh Restoration Equivalent Proection	potential surplus
Broad	03050105				9	-2	7	3	-2	1	0	0	0
Cape Fear	03030002				19	-17	3				0	0	0
Cape Fear	03030003	84,328	-25,541	58,787							0	0	0
Cape Fear	03030004	21,921	-18,618	3,303	-1	11	10				0	0	0
Cape Fear	03030005	35,187	-1,545	33,642	374	-28	346	569	13	581	34	43	77
Cape Fear	03030006							117	-41	76	0	0	0
Cape Fear	03030007	1,170	-276	894	24	115	140	43	126	169	0	0	0
Catawba	03050101	6,362	-6,235	127	5	1	6				0	0	0
Catawba	03050102	21,844	-529	21,315	6	0	7	0	0	0	0	0	0
Chowan	03010203	9,323	540	9,863	84	3	87	5	2	7	0	0	0
Chowan	03010204	2,425	176	2,601	12	0	12	0	0	0	0	0	0
French Broad	06010105	27,821	-3,229	24,592	4	7	11	0	0	0	0	0	0
French Broad	06010106	7,646	-2,068	5,578	5	0	5	0	0	0	0	0	0
Little Tennessee	06010203	1,480	-1,450	30	0	0	0	0	0	0	0	0	0
Lumber	03040203							566	38	604	0	0	0
Lumber	03040204	4,833	-167	4,666	4	0	4				0	0	0
Lumber	03040206	2,112	-755	1,357	-3	5	2				0	0	0
Lumber	03040207							57	-1	56	0	0	0
Neuse	03020201				15	38	54	60	-3	57	0	0	0
Neuse	03020202				163	157	320	7	8	15	0	0	0
Neuse	03020203	13,539	-408	13,131	108	89	197	17	20	37	0	0	0
Neuse	03020204	9,979	-1,772	8,207	57	56	112	1,348	1,006	2,353	6	1	7
New	05050001	5,727	-691	5,036	10	7	17	-1	2	1	0	0	0

Basin	CU	Stream Restoration Mitigation Projection	Stream Restoration Mitigation Equivalent	potential surplus	Riparian Restoration Mitigation Projection	Riparian Restoration Equivalent Projection	potential surplus	Nonriparian Restoration Projection	Nonriparian Restoration Equivalent Projection	potential surplus	Coastal Marsh Restoration Projection	Coastal Marsh Restoration Equivalent Proection	potential surplus
Pasquotank	03010205	13,880	-2,030	11,850	388	16	404	1,111	10	1,121	8	34	42
Roanoke	03010102	1,801	2,261	4,062	0	0	0	0	0	0	0	0	0
Roanoke	03010104	14,634	-214	14,420	88	3	91	0	0	0	0	0	0
Roanoke	03010106	4,668	-332	4,336							0	0	0
Roanoke	03010107	11,968	-631	11,337	52	100	152	124	675	799	0	0	0
Savannah	03060101	3,942	188	4,130	0	0	0	0	0	0	0	0	0
Tar-Pamlico	03020101	14,444	-3,103	11,341	6	2	8	14	-2	12	0	0	0
Tar-Pamlico	03020102	5,373	-1,128	4,245	80	3	83				0	0	0
Tar-Pamlico	03020103	7,936	-316	7,620	126	80	206	17	-1	17	0	0	0
Tar-Pamlico	03020104	6,187	-4,444	1,743	44	7	50	246	102	348	3	4	7
Tar-Pamlico	03020105				16	0	15	16	-1	15			
Watauga	06010103	2,565	-735	1,830							0	0	0
White Oak	03030001	7,474	-4,618	2,856				17	-8	8	4	0	4
White Oak	03020106	5,400	-2,090	3,310	31	0	31				0	0	0
Yadkin	03040101				55	-4	51	0	0	0	0	0	0
Yadkin	03040102	17,013	-5,813	11,200	49	4	52	20	5	25	0	0	0
Yadkin	03040103	24,055	4,180	28,235	22	2	24	0	2	2	0	0	0
Yadkin	03040104				15	-4	11	0	0	0	0	0	0
Yadkin	03040105							14	7	21	0	0	0
Yadkin	03040201	20,052	918	20,970	41	14	55	0	0	0	0	0	0

As of February 2007 data EEP provided to Dye Management, EEP will have more than sufficient mitigation at Year 7 (ending June 30, 2007) to meet NCDOT's mitigation projections for permitting needs for stream restoration, riparian wetlands and non-riparian wetlands in the "surplus' column above per that mitigation type (stream, riparian wetlands and non-riparian wetlands).

Exhibit G-2: 'Surplus' by June 30, 2013 (Year 10)

	Basin	Stream Restoration Mitigation Projection	Stream Restoration Mitigation Equivalent	potential surplus	Riparian Restoration Mitigation Projection	Riparian Restoration Equivalent Projection	potential surplus	Nonriparian Restoration Projection	Nonriparian Restoration Equivalent Projection	potential surplus	Coastal Marsh Restoration Projection	Coastal Marsh Restoration Equivalent Proection	potential surplus
Cape Fear	03030003	71,964	-37,905	34,059									
Cape Fear	03030005	34,835	-1,897	32,938	370	-32	338	568	12	580	34	43	77
Cape Fear	03030006							113	-46	66	0	0	0
Cape Fear	03030007	978	-468	510	24	115	139	42	125	168	0	0	0
Catawba	03050102	21,694	-679	21,015	6	0	6						
Chowan	03010203	9,029	246	9,275									
Chowan	03010204				11	-1	9						
French Broad	06010105				2	5	7						
French Broad	06010106	6,746	-2,968	3,778	5	0	5						
Little Tennessee	06010204				48	0	48						
Lumber	03040203	22	-7,730	-7,708	-26	-9	-35	566	38	604			
Lumber	03040204	4,743	-257	4,486	1	-4	-3	-1	-1	-1			
Lumber	03040207							54	-3	51			
Neuse	03020201				14	36	50	58	-5	54			
Broad	03050105				9	-2	6	3	-2	1			
Neuse	03020202				163	157	320	7	8	15			
Neuse	03020203	13,323	-624	12,699	108	89	197	17	19	36			
Neuse	03020204	9,919	-1,832	8,087	57	55	112	1,348	1,006	2,353	6	1	7
Pasquotank	03010205	12,717	-3,193	9,524	386	14	400	1,103	1	1,104	8	33	41
Roanoke	03010102	1,681	2,141	3,822									
Roanoke	03010107	11,170	-1,429	9,741	49	97	146	123	675	798			
White Oak	03030001	7,354	-4,738	2,616	-5	-8	-14	16	-8	8	4	0	4

	Basin	Stream Restoration Mitigation Projection	Stream Restoration Mitigation Equivalent	potential surplus	Riparian Restoration Mitigation Projection	Riparian Restoration Equivalent Projection	potential surplus	Nonriparian Restoration Projection	Nonriparian Restoration Equivalent Projection	potential surplus	Coastal Marsh Restoration Projection	Coastal Marsh Restoration Equivalent Proection	potential surplus
As of February 2007 data EEP provided to Dye Management, EEP will have more than instituted sufficient mitigation at Year 10 (ending June 30, 2013) for basins with positive numbers in "potential surplus" column for that mitigation type to meet NCDOT's mitigation projections for permitting needs for that mitigation type. However, EEP must also provide for NCDOT permitting needs for Years 11, 12, 13, 14 and 15 by Year 10 (ending June 30, 2013). At the time EEP sent this spreadsheet to EEP, the wetland and stream impacts for permitting needs for Years 11, 12, 13, 14 and 15 have not been identified, and the Year 10 data is limited. Therefore, the mitigation may not in fact be "surplus"													