



ENVIRONMENTAL
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State Wetland Protection

Status, Trends, & Model Approaches

*A 50-state study by the
Environmental Law Institute*

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Appendix: State Profiles

North Carolina

I. Overview

With approximately five million acres of wetland area, North Carolina contains an abundance of wetland resources. However, historical data indicates that the state had nearly 7.5 million acres of wetlands in pre-settlement times. About 34 percent of the state's wetland areas have been impacted over the past century by rapid urban and agricultural development,¹ with the most extensive losses occurring in the last 30 years.²

Today, the rapidly growing state has adopted numerous regulatory controls to protect wetlands. The state relies primarily on §401 water quality certification under the Clean Water Act (CWA) for state-level wetland regulation and has implemented similar protections for isolated wetlands and waters, as well as stream buffers in selected river basins. Additional wetland provisions apply in the state's coastal counties. Finally, North Carolina has initiated an integrated mitigation and in-lieu-fee program with a watershed focus. Through these programs, along with education, restoration, and water quality initiatives, North Carolina seeks to effectively replace unavoidable wetland losses in the state.

II. Regulatory Programs

Wetland definitions and delineation

North Carolina defines "waters" as

any stream, river, brook, swamp, lake, sound, tidal estuary, bay, creek, reservoir, waterway, or other body or accumulation of water, whether surface or underground, public or private, or natural or artificial, that is contained in, flows through, or borders upon any portion of this State, including any portion of the Atlantic Ocean over which the State has jurisdiction.³

However, a 2002 North Carolina Court of Appeals decision made clear that this definition includes wetlands, ruling that the state had authority to adopt regulations protecting wetlands.⁴

State regulations further define "wetlands" to be:

'waters' as defined [above] and areas that are inundated or saturated by an accumulation of surface or ground water. . . at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands

¹ NORTH CAROLINA DIVISION OF ENVIRONMENTAL MANAGEMENT, STATUS AND TRENDS OF WETLANDS IN NORTH CAROLINA: A REPORT TO THE N.C. LEGISLATIVE STUDY COMMISSION ON WETLANDS PROTECTION, Report No. 91-01 (1991).

² U.S. Environmental Protection Agency, *Status and Trends*, at <http://www.epa.gov/OWOW/wetlands/vital/status.html> (last visited Sept. 13, 2007).

³ N.C. GEN. STAT. § 143-212(6).

⁴ Because the Supreme Court declined to hear the case, the decision is final in North Carolina. See *North Carolina Home Builders Association v. Environmental Management Commission*, 573 S.E.2d 732 (N.C. Ct. App. 2002), *cert denied*, 579 S.E.2d 392 (2003).

generally include swamps, marshes, bogs and similar areas. Wetlands classified as waters of the state are restricted to waters of the United States, as defined in the Federal Code of Regulations.⁵

Despite the exclusion of wetlands not subject to federal jurisdiction, North Carolina still regulates “isolated wetlands,” which are defined as:

those waters which are inundated or saturated by an accumulation of surface or ground water at a frequency and duration to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions and under normal circumstances have no visible surface water connection to downstream waters of the state.⁶

The state relies on the U.S. Army Corps of Engineers’ (“Corps”) 1987 *Wetlands Delineation Manual* for making wetland delineation determinations.⁷

Wetland-related laws and regulations

North Carolina relies primarily on §401 water quality certification to regulate wetlands, but also has adopted three additional sets of laws and regulations directed at wetland protection: rules on discharges to isolated wetlands and isolated waters,⁸ the North Carolina Coastal Area Management Act,⁹ and riparian buffer protection rules.¹⁰

§401 certification and isolated wetlands regulations. As previously stated, §401 certification is North Carolina’s primary form of state-level wetland regulation. The North Carolina Department of Environment and Natural Resources (NCDENR), Division of Water Quality (DWQ) administers the §401 program. The state’s water quality certification regulations outline procedures for application, review, public notice, and public hearing.¹¹

In 2001, the state adopted similar rules pertaining to discharges into isolated wetlands, which are also implemented by DWQ.¹² 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.”¹³ Permits may be issued for authorized activities that do not alter existing uses. Permit exemptions are listed in the regulations.¹⁴ The regulations also describe the required application process, public notice and public hearing procedures, and application review and decision-making.¹⁵

⁵ N.C. ADMIN. CODE 02T .0103(46); N.C. ADMIN. CODE 02B .0202.

⁶ *Id.* 02H.1300. Visible surface water connection may include but is not limited to a connection to other surface water via: (1) contiguous wetlands; (2) intermittent or perennial streams; and (3) ditches with intermittent or perennial flow. *Id.*

⁷ U.S. ARMY CORPS OF ENGINEERS, WETLANDS RESEARCH PROGRAM TECHNICAL REPORT Y-87-1, CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL (1987), *available at* <http://el.erdc.usace.army.mil/elpubs/pdf/wlman87.pdf>.

⁸ N.C. ADMIN. CODE 02H.1300.

⁹ N.C. GEN. STAT. § 113A-100,07H.

¹⁰ N.C. ADMIN. CODE 02B.0233, 02B.0259.

¹¹ *Id.* 02H.0500.

¹² *Id.* 02H.1300; N.C. GEN. STAT. § 143-21.

¹³ N.C. ADMIN. CODE 02H.1301.

¹⁴ *Id.*

¹⁵ *Id.* 02H.1300.

DWQ issues approximately 1,800 certifications per year on average, including permits for isolated wetlands.¹⁶ Most certification applications are approved though site-specific conditions such as mitigation or stormwater management requirements. State regulations outline a qualitative application review process for permitting staff, including measures for avoidance and minimization of impacts.¹⁷ In addition, numerical onsite stormwater management requirements and criteria for cumulative impacts on downstream water quality are considered in certification decisions.¹⁸

Coastal Area Management Act. North Carolina's Coastal Area Management Act (CAMA) pertains to the state's 20 coastal counties. Under the Act, developments¹⁹ in "Areas of Environmental Concern" (AECs) require a separate permit from NCDENR's Division of Coastal Management (DCM).²⁰ AECs are natural areas that may be easily impacted by erosion or flooding or that may have important environmental, social, or economic value to the state. Almost all coastal waters are classified as an AEC, including coastal wetlands.²¹ Certain permit exemptions are also listed in the CAMA.²²

The DCM issues approximately 40 to 50 wetland-related CAMA permits a year. The vast majority of applications are approved. However, approval is not always a straightforward process. Permitting staff often work with applicants to modify their original applications so that they meet approval under the state's standards. Staff may also condition permits as necessary.²³

Riparian area buffer rules. In 1997, North Carolina adopted rules creating a 50-foot wide riparian buffer along waterways in the Neuse river basin. Similar rules were adopted for the Tar-

¹⁶ Isolated wetlands permits account for only approximately one percent of the total number of wetland permits issued each year.

¹⁷ N.C. ADMIN. CODE 02H.1300, 02H.0500.

¹⁸ Personal communication with John Dorney, N.C. Dep't of Env't and Natural Resources (Aug. 19, 2004).

¹⁹ "Developments" include activities such as dredging or filling of wetlands or other coastal waters and construction of marinas, piers, docks, bulkheads, oceanfront structures, and roads. See North Carolina Department of Environment and Natural Resources, Division of Coastal Management, *CAMA Permits: Will My Project Require a Permit?*, at <http://dcm2.enr.state.nc.us/permits/aecs.htm> (last visited Sept. 13, 2007).

²⁰ N.C. GEN. STAT. § 113A-100; N.C. ADMIN. CODE 07H.

²¹ "Coastal wetlands" are defined as "any salt marsh or other marsh subject to regular or occasional flooding by tides, including wind tides (whether or not the tide waters reach the marshland areas through natural or artificial watercourses), provided this shall not include hurricane or tropical storm tides. Coastal wetlands contain some, but not necessarily all, of the following marsh plant species: *Spartina alterniflora* (Salt Marsh Cordgrass), *Juncus roemerianus* (Black Needlerush), *Salicornia spp.* (Glasswort), *Distichlis spicata* (Salt or Spike Grass), *Limonium spp.* (Sea Lavender), *Scirpus spp.* (Bulrush), *Cladium jamaicense* (Saw Grass), *Typha spp.* (Cattail), *Spartina patens* (Salt Meadow Grass or Hay), *Spartina cynosuroides* (Salt Reed or Giant Cordgrass). The coastal wetlands AEC includes any contiguous lands designated by the Secretary of ENR pursuant to G.S. 113-230 (a)." N.C. ADMIN. CODE 07H.0205.

²² Exemptions include: road maintenance within a public right-of-way; utility maintenance on projects that already have CAMA permits; energy facilities covered by other laws; agricultural or forestry production that doesn't involve the excavation or filling of estuarine or navigable waters or coastal marshland; agricultural or forestry ditches less than six feet wide and four feet deep; emergency maintenance and repairs when life and property are in danger; and the construction of an accessory building usually found with an existing structure, if no filling of estuarine or navigable waters or coastal marshland is involved. North Carolina Department of Environment and Natural Resources, *supra* note 19.

²³ Personal communication with Doug Huggett, N.C. Dep't of Env't and Natural Resources (Aug. 20, 2004).

Pamlico river basin in 2000 and for the Randleman Lake basin in 2001. NCDENR-DWQ implements the rules. Buffers include all areas within 50 feet of intermittent or perennial streams, lakes, ponds, or estuaries. Ditches, ephemeral streams, and wetlands are not buffered.²⁴ The buffer rules, part of a larger effort to reduce nutrient loading in each basin, are more stringent than the state's other wetland regulations.²⁵ The rules protect and maintain the designated buffer areas, creating two zones: Zone One, the inner 30 feet, is to remain undisturbed (with the exception of certain activities); and Zone Two, the outer 20 feet, must remain vegetated (with the exception of certain activities). Specific activities are identified in the rule as "exempt," "allowable," "allowable with mitigation," or "prohibited."²⁶ The rules also include a delegation rule that describes the criteria and process for local governments to obtain authority to implement the buffer rules within their jurisdictions.²⁷

Organization of state agencies

In 1997, NCDENR developed a statewide plan to improve and simplify North Carolina's wetland and stream protection policies, known as the *Statewide Wetland and Stream Management Strategy*. The plan outlines a process to guide stream and wetlands protection efforts.²⁸

The majority of wetland-related, state-level activities in North Carolina are overseen by NCDENR, although other key state agencies, such as the North Carolina Department of Transportation, are integrally involved in mitigation and other wetland-related activities. Within NCDENR, DWQ and DCM oversee most wetland-related regulatory activities. NCDENR's Ecosystem Enhancement Program focuses on aquatic resource planning and mitigation.

Division of Water Quality. As the division administering the state's §401 water quality certification program, buffer rules, and isolated wetlands program, the DWQ is the foremost wetland regulatory authority in the state. Approximately 40 full-time equivalents (FTEs) work in the division's wetland programs, with about half in the Raleigh headquarters, and half in seven regional offices located throughout the state. Headquarter staff receive all applications for processing, but for more involved cases, field staff conduct site visits and provide input on permit decision-making. Field staff also review existing permits for compliance and issue certifications. Additional DWQ activities include enforcement, monitoring and assessment, technical assistance to mitigation parties, and policy development. The Division's annual budget averages around \$1.8 million and is derived from a combination of state general funds, §401 certification and isolated wetland permit application fees, U.S. Environmental Protection Agency (EPA) grants, and funding from other state agencies.²⁹

²⁴ N.C. ADMIN. CODE 02B.0233.

²⁵ Dorney, *supra* note 18.

²⁶ Examples of "exempt" activities include driveway and utility crossings of certain sizes through Zone One, and grading and revegetation 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.

²⁷ North Carolina Department of Environment and Natural Resources, Division of Water Quality, *Non Point Source Management Program: Buffer Rules*, at http://h2o.enr.state.nc.us/nps/buffer_rules.htm (last visited Sept. 12, 2007).

²⁸ See generally North Carolina Department of Environment and Natural Resources, *North Carolina's Statewide Wetland and Stream Management Strategy*, at <http://h2o.enr.state.nc.us/nwetlands/swsms.html> (last visited Sept. 13, 2007).

²⁹ Dorney, *supra* note 18.

Division of Coastal Management. DCM is charged with protecting and managing coastal resources for the state's 20 coastal counties. DCM does this primarily through administration of the Coastal Area Management Act, which includes protections for coastal wetlands. The Division completed a wetland conservation plan in the early 1990s in order to provide detailed wetland information to local, state, and federal governments, businesses, nonprofit organizations, and the public.³⁰ In addition to wetlands, DCM regularly manages issues relating to coastal hazards, beach erosion and maintenance, beach and waterfront access, coastal development, and other issues.³¹

The division employs approximately 62 FTEs, divided among the CAMA regulatory section, the land-use planning section, and the North Carolina National Estuarine Research Reserve. Two FTEs, located in the land-use planning section, are devoted exclusively to wetland activities, although wetland conservation is an integral part of most division activities. Thus, it is difficult to specify the amount of resources devoted specifically to wetlands. The regulatory section is responsible for all permitting, compliance, and enforcement. The Research Reserve serves as a clearinghouse for coastal science and conducts various types of research, outreach, and education. The planning section's activities vary, but often include rule development and CAMA land-use planning, as well as coastal wetland mitigation issues as they arise.³² The planning section also maintains DCM's inventory and geographic information system (GIS) data for wetland types, functions, and potential restoration sites in the CAMA counties.³³

DCM's central office, which also serves as a regional office, is located in Morehead City, North Carolina. The division's other three regional offices are located in Washington, Elizabeth City, and Wilmington. Some DCM staff are also located in the NCDENR's headquarters in Raleigh.³⁴ The Division's annual budget for Fiscal Year 2003 was \$7,540,000, supported by Coastal Zone Management Act and National Estuarine Research Reserve grants from the National Oceanic and Atmospheric Administration and state and other matching funds.³⁵

Ecosystem Enhancement Program. The North Carolina Ecosystem Enhancement Program (NCEEP) was established in 2003 by a Memorandum of Agreement (MOA) signed by the NCDENR, North Carolina Department of Transportation (NCDOT), and the U.S. Army Corps of Engineers' Wilmington District.³⁶ Under the MOA, the NCEEP consolidated the state's previous environmental mitigation program, the North Carolina Wetlands Restoration

³⁰ See North Carolina Department of Environment and Natural Resources, Division of Coastal Management, *Wetlands: Conservation Plan*, at <http://dcm2.enr.state.nc.us/Wetlands/conserves.htm> (last visited Sept. 13, 2007).

³¹ See North Carolina Department of Environment and Natural Resources, Division of Coastal Management, *Division of Coastal Management*, at <http://dcm2.enr.state.nc.us/> (last visited Sept. 12, 2007).

³² Huggett, *supra* note 23.

³³ See North Carolina Department of Environment and Natural Resources - Division of Coastal Management, *Wetlands: Restoration*, at <http://dcm2.enr.state.nc.us/wetlands/restore.htm> (last visited Sept. 13, 2007).

³⁴ Huggett, *supra* note 23.

³⁵ Personal communication with Steve Underwood, N.C. Dep't of Env't and Natural Resources (Aug. 27, 2004).

³⁶ Memorandum of Agreement among the North Carolina Department of Environment and Natural Resources and the North Carolina Department of Transportation and the United States Army Corps of Engineers, Wilmington District (2003) *available at* http://www.saw.usace.army.mil/wetlands/Policies/EEP_FinalMOA_NCDOT.pdf.

Program,³⁷ and the NCDOT's mitigation programs.³⁸ By providing a unified, watershed-based approach for all of the state's aquatic resources planning and mitigation activities, NCEEP seeks to increase regulatory efficiency and ecological effectiveness.³⁹ NCEEP administers four main programs: an in-lieu-fee program that provides an alternative mitigation option to permitted applicants; a mitigation program that offsets all NCDOT permitted off-site impacts to wetlands; a buffer mitigation program for state river basins being managed for nutrient issues; and a nutrient offset program that is part of a program to meet nutrient reduction goals in particular river basins.⁴⁰

Approximately 60 staff work in the NCEEP; however, the program relies upon consultants for many of its activities. At full capacity, the NCEEP will eventually staff about 63 FTEs. The agency is based in Raleigh and operates a regional office in Asheville. NCEEP activities generally include: monitoring, restoration project management, watershed planning, and other related research. Most funding comes from the NCDOT, approximately \$95 million annually, though the amount varies depending on NCDOT's anticipated mitigation needs. In-lieu fee payments,⁴¹ state general appropriations, and federal grants contribute to the budget in varying amounts as well.⁴²

Nationwide and general permits

The State of North Carolina regularly reviews and issues §401 water quality certifications for the Corps' nationwide permits (NWP). Most 2002 NWPs were conditionally approved, while others were denied or unconditionally approved.⁴³ Written notification and submission of an application fee may be required for some conditioned NWPs. If applicants cannot meet the conditions of the applicable NWP, they may still apply for an individual permit.⁴⁴ North Carolina's action on the 2007 NWPs could not be reviewed within the reporting period.

The state also issued a five-year general permit for isolated wetlands in 2003. Under the isolated wetland rules and general permit, impacts to the following do not require a permit, as long as

³⁷ The NCDENR's North Carolina Wetlands Restoration Program (NCWRP), the NCEEP's presursor, was created by state legislature in 1996 as a non-regulatory program with a mandate to improve the ecological effectiveness of compensatory mitigation through the use of watershed planning to identify and implement mitigation projects and to act as an in-lieu-fee provider available throughout North Carolina.

³⁸ NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, *WETLANDS RESTORATION PROGRAM: 2003 ANNUAL REPORT (2003)*, available at <http://www.nceep.net/news/annualreport/2003/03WRPAnnual.pdf>.

³⁹ See COMMITTEE ON MITIGATING WETLAND LOSSES ET AL., *COMPENSATING FOR WETLAND LOSSES UNDER THE CLEAN WATER ACT (2001)*.

⁴⁰ Personal communication with Suzanne Klimek, N.C. Ecosystem Enhancement Program (Jul. 25, 2007).

⁴¹ In-lieu-fee payments include those required for §401/404 permits, nutrient offset payments, and riparian buffer payments.

⁴² Personal communication with Suzanne Klimek, N.C. Ecosystem Enhancement Program (Aug. 24, 2004).

⁴³ The state has issued approval for the following NWPs: NWP#1 - Aids to Navigation, NWP#2 - Structures in Artificial Canals, NWP#9 - Structures in Fleeting and Anchorage Areas, NWP#10 - Mooring Buoys, NWP#11 - Temporary Recreational Structures, NWP#24 - State Administered 404 Program (N/A), and NWP#28 - Modification of Existing Marinas. Three NWPs have been denied outright (individual §401 water quality certifications are required for these activities): NWP#8 - Oil and Gas Structures, NWP#21 - Surface Coal Mining Activities, and NWP#34 - Cranberry Production Activities. Varying sets of conditions have been issued for remaining NWPs.

⁴⁴ Dorney, *supra* note 18.

they meet water quality standards and protect existing uses: less than 150 linear feet of isolated stream; less than one-third acre of isolated surface waters; less than one-third acre of isolated wetlands east of Interstate-95; or less than one-tenth acre of isolated wetland west of Interstate-95. The general permit requires written application and approval from DWQ for impacts above these thresholds but less than one acre of isolated wetland or 500 feet of isolated streams. Impacts above the above thresholds require individual permits following public notice. The general permit outlines requirements for impact reports, on-site stormwater management, compensatory mitigation, sedimentation and erosion control, and compliance with state water quality standards, as well as compliance, reporting, and public comment provisions.⁴⁵ Buffer rules are applicable to all projects and require written concurrence for buffer and/or stream or wetland impacts.⁴⁶

Mitigation and restoration

NCEEP and the DWQ are lead state agencies for mitigation-related activities in North Carolina. DWQ is responsible for implementing the state's regulations pertaining to mitigation and works with applicants throughout the permit process, while the NCEEP provides high quality options for mitigating parties.⁴⁷ Numerous other state and federal agencies participate in the state's collaborative efforts through the Mitigation Banking Review Team (MBRT) and the Program Assessment and Consistency Group, a state-level group created to guide and support NCEEP.⁴⁸

Regulations pertaining to mitigation. The state's water quality certification regulations outline acceptable forms of compensatory mitigation for unavoidable losses of wetlands that are considered "waters of the state." Participation in the state's in-lieu fee program is preferred, when possible. Project-specific restoration, creation, enhancement, or preservation projects are also acceptable methods of mitigation. The regulations specify that, when practical, mitigation should take place within the same river basin and physiographic province of the impacted wetlands, and within the same water supply watershed for some classes of waters. In-kind mitigation is also preferred where practical. The regulations also detail exceptions⁴⁹ and replacement ratios.^{50,51}

⁴⁵ See North Carolina Department of Environment and Natural Resources, Division of Water Quality, *State General Permit for Impacts to Isolated Wetlands and Isolated Waters*, Permit No. IWGP100000 (Sept. 10, 2003), available at <http://h2o.enr.state.nc.us/ncwetlands/isogp.pdf>.

⁴⁶ See North Carolina Department of Environment and Natural Resources, Division of Water Quality, *North Carolina General 401 Water Quality Certifications matching the U.S. Army Corps of Engineers 404 Nationwide, Regional and General Permits*, at <http://h2o.enr.state.nc.us/ncwetlands/certs.html> (last visited Sept. 13, 2007).

⁴⁷ Due to the stringency of the Coastal Area Management Act, the DCM does handle compensatory mitigation issues as regularly as the NCEEP and the DWQ.

⁴⁸ Klimek, *supra* note 42.

⁴⁹ Mitigation is not required for Class WL wetlands of less than one acre.

⁵⁰ Mitigation in the form of restoration is to be conducted based on the following ratios (acres restored to acres lost): 4:1 for wetlands located within 150 feet of the mean high water line or normal water level of any perennial or intermittent water body; 2:1 for wetlands located between 150 feet and 1,000 feet from the mean high water line or normal water level of any perennial or intermittent water body; 2:1 for linear projects impacting less than three acres; and 1:1 for all other wetlands. For mitigation in the form of creation, restoration replacement ratios should be multiplied by 1.5; for enhancement, ratios should be multiplied by two; and for preservation, ratios should be multiplied by five. Note that these ratios do not apply to certain approved mitigation sites (e.g., banks) with approved credit/debit ratios.

⁵¹ N.C. ADMIN. CODE 02H.0506(h).

The regulations governing isolated wetlands and waters also specify compensatory mitigation requirements. Again, participation in the state's in-lieu fee program is preferred, when possible, followed by project-specific restoration. Creation and preservation projects are also acceptable methods of mitigation. The regulations state that, when practical, mitigation should take place within the same river basin and physiographic province. In-kind mitigation is also preferred, where practical, unless other types of mitigation provide greater environmental benefit. The regulations also present exceptions⁵² and replacement ratios.^{53,54}

The state's buffer rules specify mitigation requirements as well, which may be determined by DWQ or the local delegated authority. Several mitigation methods are offered, including in-lieu fee compensation, donation of property, or restoration or enhancement of an otherwise unprotected riparian buffer. Impacts to Zone One (the inner zone) of the buffer must be mitigated at a 3:1 ratio, while impacts to Zone Two (the outer zone) must be mitigated at a 1.5:1 ratio. Wetland impacts, however, must be mitigated according to the rules outlined in the state's water quality certification regulations. Riparian buffer mitigation must be located in the same Nutrient Management Zone. Detailed procedures and requirements are listed in the rules.⁵⁵

State laws and regulations outline requirements for private mitigation banks as well. Banks must be consistent with the state's Basinwide Restoration Plans and must be located within an area that is identified as a priority for restoration by the plan. The state may provide comments through the MBRT. Mitigation banking credits must follow state prescriptions.⁵⁶

Ecosystem Enhancement Program. NCEEP's primary goals are to provide high quality compensatory mitigation for unavoidable impacts to aquatic resources and to incorporate compensatory mitigation projects into comprehensive watershed restoration initiatives. The approach is intended to increase the ecological effectiveness of compensatory mitigation and to provide a more cost effective and predictable mechanism for permittees who are compensating for unavoidable impacts.⁵⁷ The NCEEP strategy involves the development of River Basin Restoration Priorities, which include the identification of Targeted Local Watersheds (TLWs) (14-digit hydrologic units) within each 8-digit U.S. Geological Survey Cataloging Unit in the state.⁵⁸ The strategy also calls for the implementation of mitigation and restoration projects that

⁵² Mitigation is not required for activities impacting less than one acre of isolated and other wetlands.

⁵³ Mitigation in the form of restoration is to be conducted on a 2:1 ratio (acres restored to acres lost). For mitigation in the form of creation, restoration replacement ratios should be multiplied by 1.5; for enhancement, ratios should be multiplied by two; and for preservation, ratios should be multiplied by five. Note that these ratios do not apply to certain approved mitigation sites (e.g., banks) with approved credit/debit ratios.

⁵⁴ N.C. ADMIN. CODE 02H .1300.

⁵⁵ *Id.* 02B.0242.

⁵⁶ *Id.* 02R.0302.

⁵⁷ NORTH CAROLINA ECOSYSTEM ENHANCEMENT PROGRAM, POLICY, PROCESS, AND PROCEDURES MANUAL (2004), available at <http://www.nceep.net/abouteepp/PPPM2/Text%20Sections%20and%20Front%20Matter/1.Introduction-2004-10-15.htm>.

⁵⁸ In 1998, the NCWRP completed river basin level plans for the 17 major river basins in the state. The plans include restoration goals, narrative overviews of the basins, priority watershed maps with water quality information, watershed boundaries, land cover data, information on existing water quality problems, and wetland impact information. See NORTH CAROLINA WETLANDS RESTORATION PROGRAM, GUIDE TO THE NORTH CAROLINA WETLAND RESTORATION PROGRAM'S WATERSHED RESTORATION STRATEGY (April 2001), available at <http://www.nceep.net/services/restplans/Planning%20Guide.pdf>. The NCEEP's Watershed Needs Assessment

provide the greatest ecological benefits, are the most cost-effective, and meet the goals established for each watershed.⁵⁹ State regulations dictate that mitigation banks must be located within TLWs or otherwise be proven to be consistent with river basin level plans.⁶⁰ To date, EEP is delivering an estimated 80 to 90 percent of all of the state's required mitigation. By 2014, NCEEP aims to have all NCDOT mitigation in place three years before permitted impacts.⁶¹

Stream mitigation standards and procedures. North Carolina has adopted stream mitigation guidelines that differ from the state's wetland mitigation guidelines. DWQ created the joint federal-state guidelines in conjunction with the Corps' Wilmington District, EPA Region IV, U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS), and the North Carolina Wildlife Resources Commission.⁶² The guidelines account for the differences in impacts to fluvial systems and generally apply to non-tidal waters.⁶³

Compliance and enforcement

Water quality, isolated wetlands, and buffers. NCDENR has the authority to assess violations to state wetland laws, although local governments may administer and enforce violations of their respective programs, if their programs conform to state statutes. Civil penalties, criminal penalties, and injunctive relief are outlined in the state statutes.

Civil penalties of up to \$25,000 per day may be applied for violations to state wetland and water quality laws, although penalties may not exceed \$10,000 per day unless another violation has been documented within five years preceding the violation.⁶⁴ The following factors must be considered in assessing civil penalties: the degree and extent of harm to the natural resources of the state, to public health, or to private property resulting from the violation; the duration and gravity of the violation; the effect on ground or surface water quantity or quality or on air quality; the cost of rectifying the damage; the amount of money saved by noncompliance; whether the violation was committed willfully or intentionally; the prior record of the violator in complying or failing to comply with programs over which the Environmental Management Commission has regulatory authority; and the cost to the state of the enforcement procedures.⁶⁵ Enforcement proceedings begin with a notice of violation to the responsible party. If the penalty

Team (WNAT), an interagency group composed of representatives from several state and federal agencies, developed a "screening methodology" to identify Targeted Local Watersheds (TLWs) in which to concentrate planning and restoration activities. Once TLWs have been identified through the screening methodology, the NCEEP will work with local governments, NGOs, and other stakeholders to complete local watershed plans in selected TLW areas throughout the state. *See Id.*

⁵⁹ WATERSHED NEEDS ASSESSMENT TEAM, REPORT TO THE MITIGATION COORDINATION GROUP (2003) (on file with author).

⁶⁰ North Carolina Wetlands Restoration Program, *supra* note 58.

⁶¹ Personal Communication with Ron Ferrell and Suzanne Klimek, N.C. Ecosystem Enhancement Program (Jan. 30, 2004).

⁶² Personal Communication with John Dorney, N.C. Dep't of Env't and Natural Resources (Aug. 23, 2004).

⁶³ 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>.

⁶⁴ N.C. GEN. STAT. § 143-215(6A).

⁶⁵ *Id.* § 143B-282.1(b).

is not paid within 30 days, civil action is instituted.⁶⁶ Injunctive relief may be sought by the state to halt the activities in question.⁶⁷

Criminal penalties⁶⁸ are also outlined in the state statute. “Negligence” violations to the state’s wetland and water quality laws are punishable by a sentence of Class 2 misdemeanor, which may include a fine of up to \$15,000 per day of the violation (but not to exceed \$200,000 over 30 days). A person who “knowingly and willfully” commits water quality or wetland violations may be found guilty of a Class I felony, which may include a fine of up to \$100,000 per day of the violation (but not to exceed \$500,000 over 30 days). Knowing violations that subject others to serious injury or death are punishable by a sentence of Class C felony, which may include a fine of up to \$250,000 per day of the violation (but not to exceed \$1,000,000 total over 30 days).⁶⁹

Most enforcement cases are resolved through correspondence between DWQ staff and the responsible party. Once the DWQ becomes aware of a violation, a Notice of Violation outlining the nature of the offense and the expectations for remediation is sent to the party(ies) responsible. DWQ staff usually work with the violating individual to resolve the matter, and in many cases, a penalty may be assessed. If a resolution cannot be obtained from these procedures, the State Bureau of Investigation and Attorney General may become involved and civil or criminal actions may be initiated.⁷⁰

Coastal Area Management Act. DCM is responsible for enforcing permits issued under CAMA. Enforcement mechanisms include penalty and civil prosecution, if warranted. DCM staff monitor projects that have received major or general permits to make sure they comply with state rules. Site inspections and aerial surveillance are also conducted routinely by DCM staff, allowing unpermitted activity to be assessed on a regular basis. The Division employs a compliance coordinator who provides tracking information and technical advice and often works with the Corps on enforcement activities. If a violation occurs, DCM initiates enforcement action by issuing a violation notice and cease and desist order. In some cases, an after-the-fact permit may be applicable. Otherwise, restoration may be required along with a civil penalty of up to \$2,500 per day of the violation. The Division issues approximately 150 violation notices each year, and most penalties are between \$150 and \$500. Collected penalties go to the state’s General Fund and are redirected to local school boards.⁷¹ Most enforcement actions, including collection of assessed penalties and required restoration, are resolved within weeks. Occasionally, cases may proceed to the next level of enforcement, when DCM will refer to the

⁶⁶ *Id.* § 143-215(6A).

⁶⁷ *Id.* § 143-215(6C).

⁶⁸ Certain activities relating to natural disaster, emergencies, third parties, requirements of other environmental statutes and regulations, and some violations to permit limitations are exempt from criminal penalty.

⁶⁹ N.C. GEN. STAT. § 143-215(6B).

⁷⁰ Personal communication with Danny Smith, N.C. Dep’t of Env’t and Natural Resources (Oct. 1, 2004).

⁷¹ North Carolina Department of Environment and Natural Resources, Division of Coastal Management *CAMA Rules & Policies: Enforcement*, at <http://dcm2.enr.state.nc.us/Rules/enforce.htm> (last visited Sept. 13, 2007).

North Carolina Attorney General's Office.⁷² These cases may take several months or years to complete.⁷³

Tracking systems

DWQ has maintained a database that tracks certifications and isolated wetlands permits since 1995 and has data going back to the early 1980s. The system tracks information such as type of wetland impacted, geographical location and associated river basin, dates, amount and type of mitigation, fees paid, and other application information. Data is derived from permit applications and site inspections. Applicants are required to submit monitoring data for mitigation projects for a minimum of five years; however, the current system does not track this data efficiently. DWQ is revising the tracking system under a grant from the EPA. The improved system will handle monitoring information better and will be available online.⁷⁴

DCM has developed a database to track coastal permits. Currently, the tracking system is being implemented for general permits, but is still in the development phase for major permits. The Division also plans to related information, such as enforcement actions and minor permits. Data comes from a variety of sources, including permit applications, site inspections, and review of known violations. The system includes information on the type of activity, habitat, water classification, erosion rate, and numerous other data.⁷⁵ DCM also worked over several years to compile data and develop a database on the status of wetlands mitigation in all the coastal counties. The mitigation database focuses on restoration, creation, preservation, and enhancement data collected from mitigation plans (required for each mitigation site), including wetland types and acreages. Monitoring data (also required by the permit applicant) and, in some cases, GIS data, also were added to the database.⁷⁶ Using information in the database, the DCM developed the North Carolina Coastal Wetland Status Report 2006 (Draft 2007). This report outlines wetland losses and gains throughout the coastal counties and concludes that wetlands are still being lost. There are no plans at this time to update the database.⁷⁷

NCEEP is also in the process of developing a comprehensive information management system. The first module will be launched the fall of 2007.⁷⁸ Numerous elements will be tracked in the system, including wetland type, acreage, permit information, enforcement and compliance actions, performance criteria, and forecasting and debiting functions. Information will come from a variety of sources, such as permits and data submission requirements. The system, being developed under a Federal Highway Administration grant, will eventually link to other information management systems in the state, including those operated by DWQ, DCM, and Corps.⁷⁹

⁷² See North Carolina Department of Environment and Natural Resources, Division of Coastal Management, *Division of Coastal Management - Process Flowchart*, at <http://www.enr.state.nc.us/admin/pdf/dcmeflo.pdf> (last visited Sept. 13, 2007).

⁷³ Huggett, *supra* note 23.

⁷⁴ Dorney, *supra* note 18.

⁷⁵ Personal communication with Becky Burcham, N.C. Dep't of Env't and Natural Resources (Aug. 31, 2004).

⁷⁶ Personal communication with Melissa Carle, N.C. Dep't of Env't and Natural Resources (Aug. 31, 2004).

⁷⁷ Personal communication with Guy Stefanski, N.C. Dep't of Env't and Natural Resources (Aug. 17, 2007).

⁷⁸ Klimek, *supra* note 42.

⁷⁹ Personal communication with Donnie Brew, Fed. Highway Admin. (Oct. 1, 2004).

III. Water Quality Standards

North Carolina has adopted water quality standards (WQS) and designated uses specific to wetlands. WQS are based on narrative criteria relating to water chemistry, visual assessment, hydrology, flora and fauna, and water level.⁸⁰ Wetland classifications have been made for freshwater⁸¹ and tidal wetlands,⁸² as well as “unique” wetlands of “exceptional state or national ecological significance.”^{83,84} WQS and associated designated uses relate to flood control, hydrologic functions, sediment trapping, water quality and pollution control, shoreline protection, and habitat.⁸⁵

IV. Monitoring and Assessment

Monitoring and assessment for wetlands

North Carolina has several wetland assessment methodologies for differing purposes. For example, state regulations require the adoption of a wetland evaluation system for assessment of existing uses.⁸⁶ The DWQ has released several versions of *Guidance for Rating the Values of Wetlands in North Carolina*, most recently updated in 1995. The rating system is primarily used to provide guidance for §401 water quality certification decisions on freshwater wetlands.⁸⁷ An interagency team of representatives from NCDENR, EPA, the Corps, Federal Highway Administration, and U.S. Fish and Wildlife Service is developing an updated functional assessment method to replace the 1995 version.⁸⁸ The method is entitled the *North Carolina Wetland Assessment Method* (NC WAM). Currently, NC WAM is out for public comment, a period that will end in August 2007.⁸⁹ The method could be used by DWQ and Corps staff for permit decision-making and to assess flexible wetland mitigation and by NCEEP to guide planning efforts.⁹⁰

⁸⁰ N.C. ADMIN. CODE 02B.0231.

⁸¹ Freshwater wetlands are classified as Class WL (waters that meet the definition of wetlands found in N.C. Admin. Code 2B.0202), except those designated as Class SWL (waters that meet the definition of coastal wetlands as defined by N.C. Admin. Code 2H.0205, are landward of the mean high water line, and wetlands contiguous to estuarine waters as defined by N.C. Admin. Code 2H.0206).

⁸² Tidal salt waters are designated as Class SWL (waters that meet the definition of coastal wetlands as defined by N.C. Admin. Code 2H.0205, are landward of the mean high water line, and wetlands contiguous to estuarine waters as defined by N.C. Admin. Code 2H.0206).

⁸³ Unique wetlands (UWL) include “wetlands of exceptional state or national ecological significance which require special protection to maintain existing uses. These wetlands may include wetlands that have been documented to the satisfaction of the [North Carolina Environmental Management Commission] as habitat essential for the conservation of state or federally listed threatened or endangered species.”

⁸⁴ N.C. ADMIN. CODE 02B .0101.

⁸⁵ *Id.* 02B .0231.

⁸⁶ *Id.* 02B .0103.

⁸⁷ NORTH CAROLINA DEPARTMENT OF ENVIRONMENT, HEALTH, AND NATURAL RESOURCES, GUIDANCE FOR RATING THE VALUES OF WETLANDS IN NORTH CAROLINA (1995), available at <http://h2o.enr.state.nc.us/ncwetlands/wetval.pdf>.

⁸⁸ Dorney, *supra* note 18.

⁸⁹ U.S. Army Corps of Engineers, Wilmington District, Public Notice (May 21, 2007), available at <http://www.saw.usace.army.mil/wetlands/Notices/2007/PN-NCWAM-7-2007.pdf>.

⁹⁰ Ferrell & Klimek, *supra* note 61.

At present, the state's wetland monitoring and assessment program is separate from the surface water quality monitoring program. Functional assessment data does contribute to the compilation of the state's §305(b) report, but not the §303(d) list. DWQ hopes to more fully integrate the wetland and surface water quality monitoring and assessment programs in the future; however, there are no current efforts to integrate the programs.⁹¹

The North Carolina Coastal Region Evaluation of Wetland Significance, or NC-CREWS, is a watershed-based wetlands functional assessment model that uses GIS software and data to assess the level of water quality, wildlife habitat, and hydrologic functions of individual wetlands. The primary objective of the NC-CREWS wetland functional assessment is to provide users with information about the relative ecological importance of wetlands for use in planning and the overall management of wetlands.⁹²

Finally, DCM has worked with an interagency group composed of representatives from the DWQ, EPA, Corps, U.S. Fish and Wildlife Service, and National Marine Fisheries Service to develop a functional assessment of coastal wetlands. The final product includes GIS data layers inventorying coastal wetland functions, biological components, and high quality wetlands. Data for the assessment comes from a variety of sources, including aerial photos, field inspections, National Wetland Inventory maps, NRCS county soil surveys, and LandSat imagery. Maps have been developed for 37 coastal plain counties.⁹³ The assessment is being conducted in order to develop detailed wetland information for resource planning, with the specific objectives of identifying high quality wetlands that should be avoided and locating high quality mitigation sites.⁹⁴

Monitoring and assessment for streams

North Carolina has developed multiple monitoring and assessment protocols for lakes, streams, and rivers. DWQ's Environmental Sciences Section houses a Biological Assessment Unit, Aquatic Toxicology Unit, and Ecosystems Unit, all of which collect data and produce reports for regulatory purposes (basin-wide assessments, §303(d) lists, and §305(b) reports, stream classification, etc.). Funding for the monitoring and assessment programs comes from a variety of sources, including National Pollution Discharge Elimination System permit fees, state appropriations, and \$106 funding from the U.S. Environmental Protection Agency (EPA). NCEEP also contributes funding for watershed monitoring and assessment.⁹⁵

Methodologies include rapid bioassessment procedures and various types of toxicity testing. The Biological Assessment Unit employs a Standard Operating Procedure (SOP) emphasizing benthos macroinvertebrates, but also uses SOPs for the collection of fish community and fish

⁹¹ Personal communication with John Dorney, N.C. Dep't of Env't and Natural Resources (Jul. 25, 2007).

⁹² NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, DIVISION OF COASTAL MANAGEMENT, *NC-CREWS: NORTH CAROLINA COASTAL REGION EVALUATION OF WETLAND SIGNIFICANCE, A REPORT OF THE STRATEGIC PLAN FOR IMPROVING COASTAL MANAGEMENT IN NORTH CAROLINA (May 1999)*, available at <http://dcm2.enr.state.nc.us/Wetlands/NCCREWSDOC.pdf>.

⁹³ North Carolina Department of Environment and Natural Resources, Division of Coastal Management *Wetlands: Inventory and Assessment*, at <http://dcm2.enr.state.nc.us/wetlands/inventory.htm> (last visited Sept. 13, 2007).

⁹⁴ Huggett, *supra* note 23.

⁹⁵ Personal communication with Trish MacPherson, N.C. Dep't of Env't and Natural Resources (Sept. 2, 2004).

tissue data.⁹⁶ At present, a rapid stream functional assessment methodology is being developed under a joint state and federal initiative and should be complete by the end of 2008.⁹⁷ Toxicity tests are also continually being developed by the Aquatic Toxicology Unit.⁹⁸ Finally, the Ecosystems Unit operates the Ambient Monitoring System, a network of stream, lake, and estuarine stations strategically located for the collection of physical and chemical water quality data. The network includes over 400 locations throughout the state. This information, along with biological data, is used in the development of Basinwide Water Quality Management Plans.⁹⁹

Citizen monitoring programs

NCDENR operates Stream Watch, a project designed to encourage citizen groups to adopt a waterway for monitoring. Currently, more than 200 local groups monitor approximately 37,000 miles of waterways with state support. Local groups can include elementary school students, scout troops, businesses, and retirement groups, and range in size from a few members to several hundred members. Volunteers conduct biological, chemical, sediment, stream flow, and invasive species monitoring and also report unusual or illegal activity. Volunteers also become involved in the permit process by providing comment on existing or proposed policies. Other Stream Watch activities may include producing stream inventories, participating in educational or recreational events and stream improvement, and working with local governments and businesses on land use planning, open space and water conservation issues, and pollution prevention.¹⁰⁰

V. Restoration Partnerships

Various wetland-related landowner assistance programs operate in North Carolina. The Agricultural Cost Share Program, administered by the North Carolina Division of Soil and Water Conservation, provides farmers up to 75 percent of the cost of implementing best management practices that reduce sources of agricultural nonpoint source pollution.¹⁰¹ Although the program is not aimed expressly at wetlands, streambank stabilization, restoration of riparian buffers, and construction of wetlands are listed among the recommended best management practices.¹⁰² North Carolina Partners is administered cooperatively by the U.S. Fish and Wildlife Service,

⁹⁶ North Carolina Department of Environment and Natural Resources, Division of Water Quality, *Standard Operating Procedure Biological Monitoring, Stream Fish Community Assessment and Fish Tissue* (Mar. 2001), available at <http://www.esb.enr.state.nc.us/BAUwww/IBI%20Methods%202001.pdf>.

⁹⁷ Dorney, *supra* note 18.

⁹⁸ Personal communication with Sandy Mort, N.C. Dep't of Env't and Natural Resources (Sept. 2, 2004).

⁹⁹ See North Carolina Department of Environment and Natural Resources, Division of Water Quality, *Ecosystems Unit*, at <http://www.esb.enr.state.nc.us/EU.html> (last visited Sept. 13, 2007).

¹⁰⁰ North Carolina Stream Watch, *North Carolina Stream Watch – Activities*, at http://www.ncwater.org/Education_and_Technical_Assistance/Stream_Watch/activities.html (last visited Sept. 13, 2007).

¹⁰¹ See North Carolina Department of Environment and Natural Resources, Division of Soil and Water Conservation *Agriculture Cost Share Program*, at <http://www.enr.state.nc.us/DSWC/pages/agcostshareprogram.html> (last visited Sept. 13, 2007).

¹⁰² See North Carolina Department of Environment and Natural Resources, Division of Soil and Water Conservation, *NC Agriculture Cost Share Program – Water Quality Improvement Purposes of Approved BMPs*, at <http://www.enr.state.nc.us/DSWC/pages/BMP's.html> (last visited Sept. 12, 2007).

North Carolina Wildlife Resources Commission, NRCS, and Ducks Unlimited. The program is designed to assist private landowners in developing, restoring, or enhancing habitat, including wetlands, in order to maintain and increase waterfowl and migratory birds. Technical assistance and a small cost-share are available for participating landowners.¹⁰³ Finally, the Clean Water Management Trust Fund makes grants to local governments, state agencies, and conservation organizations to help finance projects that specifically address water pollution problems, including acquisition and restoration of wetlands, streams, and riparian buffers.¹⁰⁴

VI. Education and Outreach

Following the precedent set by the National Environmental Education Act of 1970, North Carolina passed its own Environmental Education Act in 1973. In 1974, the *Master Plan for Environmental Education* was published, setting the state's overall goals and strategies for environmental education.¹⁰⁵ However, funding was not continued for implementation of the 1974 General Master Plan.¹⁰⁶ In 1990, the same year the second National Environmental Education Act was passed, Governor Martin announced that North Carolina would create its own Office of Environmental Education.¹⁰⁷ In 1993, the North Carolina General Assembly passed the North Carolina Environmental Education Act which officially established the North Carolina Office of Environmental Education (OEE) in the NCDENR.¹⁰⁸ In 1995, the North Carolina Environmental Education Plan was presented to Governor Hunt. The plan enumerates the state's goals and objectives for environmental education in the state.¹⁰⁹

The mission of the office is to encourage, support, and promote environmental education programs, facilities and resources in North Carolina for the purpose of increasing environmental literacy and promoting natural resource stewardship. The office assists DENR divisions in their education and outreach efforts; serves as an environmental education clearinghouse for other state agencies and organizations to distribute education and outreach materials; and promotes workshops, resources, professional development programs, environmental education centers, and other formal and non-formal environmental education programs and providers. OEE targets multiple groups, including schools, colleges, government agencies, environmental education centers, citizen groups, business and industry, libraries and the general public. Funding for these various programs comes from a combination of state appropriations, federal grants, and foundation donations.¹¹⁰

¹⁰³ See U.S. Fish and Wildlife Service, *North Carolina Partners*, at <http://manteowildlife.fws.gov/ncpartners.html> (last visited Sept. 13, 2007).

¹⁰⁴ Clean Water Management Trust Fund, *North Carolina Clean Water Management Trust Fund*, at <http://www.cwmtf.net> (last visited Sept. 13, 2007).

¹⁰⁵ North Carolina Department of Environment and Natural Resources – Office of Environmental Education, *The North Carolina Environmental Education Plan*, at <http://www.eenorthcarolina.org/whatisoffice/eeplan/principlesandconcepts.htm> (last visited Sept. 12, 2007).

¹⁰⁶ The Environmental Education Fund, *History*, at <http://www.eefund.org/level2.php?mpid=73> (last visited Sept. 13, 2007).

¹⁰⁷ NORTH CAROLINA DEPARTMENT OF ENVIRONMENT, HEALTH AND NATURAL RESOURCES, THE NORTH CAROLINA ENVIRONMENTAL EDUCATION PLAN,(1995) available at <http://www.p2pays.org/ref/24/23688.pdf>

¹⁰⁸ N.C. Gen. Stat. § 143B-285.20.

¹⁰⁹ North Carolina Department of Environment, Health and Natural Resources, *supra* note 107.

¹¹⁰ Personal communication with Janine Nicholson, N.C. Dep't of Env't and Natural Resources (Nov. 5, 2004).

OEE accomplishes its statewide environmental education mission by building capacity through partnerships with other agencies and organizations. With respect to wetlands, OEE offers consultation, promotional marketing, and educational resource support for a variety of wetland and water-related programs offered through national and state agencies, non-profit organizations, and environmental education centers.¹¹¹ For example, NCDENR's Division of Water Resources provides Project WET (Water Education for Teachers) training and the It's Our Water! High School Water Quality Education Project.¹¹²

OEE also hosts an online directory of wetlands education resources including events, programs, curricula, field trips and more.¹¹³ OEE also supports wetlands education through its North Carolina Environmental Education Certification Program. This program recognizes educators who complete a required amount of professional development in environmental education.

Various other agencies and divisions within NCDENR also implement wetland-related education and outreach programs. The North Carolina Wildlife Resources Commission offers Project WILD Aquatic¹¹⁴ and North Carolina CATCH.¹¹⁵ Each state park and recreation area has an Environmental Education Learning Experience (EELE) curriculum guide that includes on-site activities, pre- and post-visit activities, student information pages, worksheets, fact sheets, vocabulary, and references.¹¹⁶ Many of the EELEs focus on aquatic education. For example, the EELE for Goose Creek State Park is "Wetland Wonders" for Grades Four to Eight.¹¹⁷ The North Carolina Aquarium at Pine Knoll Shores also offers a number of free and fee-based education and outreach programs focused on estuarine and wetland ecology.¹¹⁸ Aquarium educators also

¹¹¹ Personal communication with Lisa Tolley, N.C. Dep't of the Env't and Natural Resources (Aug. 8, 2007).

¹¹² It's Our Water! Project is a North Carolina-specific, educational tool about water quality that is available to all the state's high school level earth/environmental science teachers and environmental educators. This tool creates a better understanding for students regarding water quality and quantity. See North Carolina Department of the Environment and Natural Resources – Division of Water Resources, *It's Our Water*, at http://www.ncwater.org/Education_and_Technical_Assistance/Its_Our_Water/ (last visited Sept. 13, 2007).

¹¹³ Educators and the public can search the Office of Environmental Education (OEE) website for wetlands resources by zip code, grade level, audience or academic focus. The OEE also promotes wetlands education workshops through its online calendar of events. The OEE averages more than 35,000 visitor sessions on its website each month. See North Carolina Department of the Environment and Natural Resources – Office of Environmental Education, *Find a Resource*, at <http://web.eenorthcarolina.org/net/content/search.aspx?s=0.0.108.37430&db=system&btid=8> (last visited Sept. 13, 2007).

¹¹⁴ Project WILD is a national environmental education program that focuses on aquatic animals and their habitats. Education specialists from the North Carolina Wildlife Resources Commission conduct the Project WILD educator workshops and ensure that the workshop activities highlight North Carolina aquatic environments. See North Carolina Wildlife Resources Commission, *Project WILD, CATCH and Outdoor Skills* http://www.ncwildlife.org/fs_index_08_education.htm (last visited Sept. 12, 2007).

¹¹⁵ See *Id.* North Carolina CATCH (Caring for Aquatics Through Conservation Habits) workshops use the CATCH curriculum guide to teach aquatic habitat information such as fish biology as well as teach "outdoor ethics, water safety and fishing skills." The curriculum and activities target children ages 8 to 15.

¹¹⁶ North Carolina State Parks, *Environmental Education Learning Experiences*, at <http://ils.unc.edu/parkproject/education/more.html> (last visited Sept. 13, 2007).

¹¹⁷ See NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, *WETLAND WONDERS (1994)*, available at http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/13/8a/9f.pdf.

¹¹⁸ See North Carolina Aquarium at Pine Knoll Shores, *Free Programs*, at <http://www.ncaquariums.com/pks/freeprograms.htm> (last visited Sept. 13, 2007); North Carolina Aquarium at Pine

visit schools and social groups throughout the state presenting various wetland-related programs.¹¹⁹ Many students also participate in the Sea Scholars program.¹²⁰ Finally, the North Carolina Coastal Reserve offers Estuary Live¹²¹ and the Coastal Explorations workshop designed for teachers and educators¹²²

VII. Coordination with State and Federal Agencies

Most aspects of North Carolina's numerous wetland-related programs and efforts have involved significant collaboration among federal and state agencies. The North Carolina Wetlands Partnership, for example, was established in 1997 to "promote the values of wetlands, riparian buffers, and watersheds."¹²³ Partners to the Memorandum of Understanding include the NRCS; EPA Region IV; U.S. Fish and Wildlife Service; Wilmington District of the Corps; North Carolina Conservation Tax Credit Program; several divisions within NCDENR, including the OEE, DCM, DWQ, and the Divisions of Forest Resources, Marine Fisheries, Parks and Recreation, Water Resources, and Soil and Water Conservation; and various private and nonprofit partners.¹²⁴ Several other entities, including the North Carolina Wildlife Resources Commission, NCDOT, National Marine Fisheries Service, Corps, and Federal Highway Administration, also have been involved in NCEEP and other wetland-related initiatives in the state.

VIII. Acronyms and Abbreviations

AEC – Area of Environmental Concern
CAMA – Coastal Area Management Act
CFR – Certified Federal Register
CWA – Clean Water Act
DCM – Division of Coastal Management
DWQ – Division of Water Quality
EPA – U.S. Environmental Protection Agency

Knoll Shores, *2006-2007 Education Guide*, available at <http://www.ncaquariums.com/pks/educationguide.pdf> (last visited Sept. 13, 2007).

¹¹⁹ Programs include Wow Wetlands and Journey through North Carolina. See North Carolina Aquarium, *Kindergarten to Fifth Grade*, at <http://www.ncaquariums.com/pks/outreachk5.htm> (last visited Sept. 13, 2007).

¹²⁰ Every fifth grade student in New Hanover County participates in Sea Scholars, which is a field course on coastal wetlands ecology, provided by the North Carolina Aquarium at Fort Fisher. Schools from throughout North Carolina also participate in Sea Scholars, as well as other wetlands field courses, offered through the Aquarium. Personal communication with Peggy Sloan, N.C. Aquarium at Fort Fisher (Aug. 9, 2007).

¹²¹ *Estuary Live* is a live, interactive, Internet field trip offered by the North Carolina Coastal Reserve. North Carolina Coastal Reserve, *Teachers and Students*, at <http://www.ncnerr.org/education/index.html> (last visited Sept. 13, 2007).

¹²² *Id.*

¹²³ See North Carolina Department of Environment and Natural Resources, *North Carolina Wetlands Partnership*, at <http://dcm2.enr.state.nc.us/ncwp/index.htm> (last visited Sept. 13, 2007).

¹²⁴ North Carolina Department of Environment and Natural Resources, North Carolina Wetlands Partnership, Partners to the Memorandum of Understanding, available at <http://dcm2.enr.state.nc.us/ncwp/mou.pdf> (last visited Sept. 12, 2007).

FTE – Full-time Equivalent
GIS – Geographic Information Systems
MOA – Memorandum of Agreement
NCAC – North Carolina Administrative Code
NC-CREWS – North Carolina Coastal Region Evaluation of Wetland Significance
NCDENR – North Carolina Department of Environment and Natural Resources
NCDOT – North Carolina Department of Transportation
NCEEP – North Carolina Ecosystem Enhancement Program
NCGS – North Carolina General Statutes
NRCS – Natural Resources Conservation Service
NWPs – Nationwide Permits
OEE – Office of Environmental Education
MBRT – Mitigation Banking Review Team
SOP – Standard Operating Procedure
TLW – Targeted Local Watershed
WNAT – Watershed Needs Assessment Team
WQS – Water Quality Standards
WRPs – Watershed Restoration Plans