WETLAND REGULATION AND PROTECTION
STATUS AND TRENDS REPORT

Prepared by

Rhode Island Department of Environmental Management

Office of Water Resources

Groundwater and Wetlands Protection Program

Prepared for

Environmental Protection Agency, Region 1

January 2007

DEDICATION

This Status and Trends Report is dedicated to the memories of our colleagues

Carl A. Ruggieri (1963 - 2006)
and
Helen L Cottrell (1959 - 2006)

whose contributions to protecting and restoring Rhode Island's freshwater and coastal wetlands will continue to benefit all Rhode Islanders, now and in the future.

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Acknowledgements: The authors of this report Carol Murphy, Sue Kiernan, Hank Ellis and Deb Pelton wish to acknowledge the contributions of Chuck Horbert, Marty Wencek, Linda Washington, Paula DiRaimo, Lisa Primiano, Paul Jordan and Dave Reis and his staff at CRMC for numerous contributions to this report.

EXECUTIVE SUMMARY

The Department of Environmental Management (DEM) Offices of Water Resources and Compliance and Inspection, supported by the Environmental Protection Agency (EPA) and with technical assistance of the New England Interstate Water Pollution Control Commission (NEIWPCC) has continued to implement and build a comprehensive state wetlands program by administering and enforcing state laws and regulations, by completing regulatory, policy, and administrative improvements, by building on successful outreach and planning projects, and by drafting a wetland monitoring plan. The DEM Wetland Programs rely on work completed by other DEM offices, and by federal, state, and local partners, including the Coastal Resources Management Council (CRMC), to ensure maximum protection of freshwater and coastal wetlands and to build a comprehensive program reflecting the EPA core essential elements.

The DEM granted 685 wetland permits during 2004 and 2005, the majority of which were for residential development. A net loss of 4.6 acres of freshwater wetland was permitted by DEM. The DEM recorded 3.6 acres of unauthorized alteration of freshwater wetlands and 10.1 acres of unauthorized alteration of perimeter, riverbank and floodplain wetlands, and completed 113 enforcement actions during the reporting period. A total of 43 acres of wetlands were restored during this time in response to enforcement actions undertaken during the reporting period or in previous years. The CRMC also regulates alterations of freshwater wetlands in the vicinity of the coast and permitted 0.2 acres of net loss of those wetlands during 2003 through 2005.

1.0 INTRODUCTION

Wetlands are vital to healthy watersheds. Widely dispersed across the landscape and varying in size and type, wetlands provide many important benefits: wildlife habitat, floodwater storage, groundwater recharge, water quality improvement and recreational opportunities. This report summarizes information on wetland protection in Rhode Island for the period of 2004 to 2006. It highlights noteworthy regulatory, outreach, monitoring, and restoration projects undertaken by the DEM, CRMC and others. Overall, it reveals that while state regulatory programs are effective at limiting the authorized physical loss of wetlands, resource managers continue to be confronted with challenges in protecting the functions and values of wetlands from the cumulative impacts of land development, from hydromodifications and from unauthorized losses.

2.0 WETLAND PROGRAM IMPLEMENTATION AND DEVELOPMENT

2.1 Wetland Permits and Decisions

DEM and CRMC regulate activities in and near freshwater wetlands within their respective areas of jurisdiction. In the DEM Wetlands Program, over 90 percent of all the permits issued in 2004 and 2005 (368 and 317, respectively) were for projects proposing insignificant alterations to wetlands (Table 1). A total of 42 permits to alter wetland and five emergency alteration permits were granted during this period. Seventeen applications were denied.

As in prior years, a majority (59%) of the new permits issued in 2004 and 2005 was for residential development (new residential lots, modifications to already developed lots, residential subdivisions, and apartments or condominiums). There were 259 permits granted for individual residential lots alone, which is 38 percent of the total permits. Twenty six percent of the permits granted were for projects associated with growth and infrastructure; specifically, offices, commercial buildings, schools, churches, roads,

bridges, utilities, wells, drainage improvements and dry hydrants. Although few in number, applications for bike path projects, dam repair projects, and water supply wells presented challenges to review, evaluate and permit.

Table 1. Freshwater wetland permits granted by DEM in 2004 and 2005, and 5-year trends (FoxPro 2004 and 2006).

Permit Types and Project Types					
Insignificant Alteration Permits					
	2001	**2002**	**2003**	**2004**	**2005**
Apartments/condos	10	15	17	26	27
Residential lots	141	115	123	150	109
Residential subdivisions	31	39	56	45	45
Industrial subdivisions	1	0	4	1	1
Office/commercial	66	57	48	52	32
School/church	4	11	5	2	15
Parks/recreation	4	2	5	5	3
Golf courses	1	0	0	0	0
Road and bridge construction	6	10	8	10	14
Driveways/access roads	2	2	1	5	4
Trails, paths, footbridges, sidewalks, and bike paths	8	5	4	3	2
Drainage and subdrains	17	4	13	12	16
Utilities and wells	6	10	11	15	9
Railways	1	0	0	1	0
Dam repair project	2	2	1	3	1
New pond/pond excavation	2	1	2	2	1
Shoreline stabilization	0	5	0	0	0
River relocation	1	3	0	0	1
Dry hydrant	0	6	4	2	1
Docks and floats	3	1	3	1	1
Land clearing	0	0	1	3	5
Irrigation/water diversion	0	1	0	1	2
Boat launch	1	1	0	2	2
Restoration, fish ladder	0	1	2	1	0
Unclassified projects	16	7	3	4	1
Subtotal	323	298	311	346	292
Permits to Alter					
Apartments/condos	0	1	0	1	0
Residential lots	9	7	2	15*	14
Residential subdivisions	0	0	4	0	1
Office/commercial	1	3	2	0	1
Road and bridge	1	1	3	1	1
Railway	0	1	0	0	0
Golf course construction	0	0	1	0	0
River/stream relocation	0	0	1	0	0
Trails, paths, footbridges, sidewalks, and bikepaths	0	0	0	0	2

Table 1 continued					
	2001	2002	2003	2004	2005
Driveway	0	0	0	0	1
Land clearing	0	0	0	0	1
New pond/pond excavation	0	0	0	0	1
Utilities and wells	0	0	0	1	0
Unclassified	3	1	1	0	1
Subtotal	14	14	14	19	23
Emergency Alteration Permits					
All project types	1	2	1	3	2
Total permits granted	338	314	326	368	317
Total permits denied	7	5	5	11	6

During 2004 and 2005, there was an increase in the number of permits to alter granted with a notable increase in the number for residential lots. Twenty-nine of the 42 permits to alter were for residential lots, possibly indicating that more marginal lots are being developed. A review of 13 of the 15* applications for residential lots that were permitted in 2004 revealed that one project proposed a driveway crossing of a swamp and an intermittent stream, two projects proposed filling of forested wetland, and ten projects proposed alteration of riverbank or perimeter wetland, or both, versus the primary wetland (C. Rowe, pers. comm., 2006).

The DEM Wetlands Program promotes policies that minimize adverse impacts on wetland resources. Persons proposing projects, both large and small, benefit from pre-application meetings with DEM, coordinated by the Office of Technical and Customer Assistance (OTCA), in which OTCA and the Program routinely provides applicants and their consultants with information regarding the wetland *Rules and Regulations*, avoidance and minimization, and other application requirements. The OTCA coordinated 47 such wetland preapplication meetings in 2006 many of which the wetland program participated in.

In addition to the issuance of permits, the DEM Wetlands Program issued other decisions in response to applications including determinations of whether regulated wetlands were present, identification of the types of wetlands, and confirmation that wetland edges delineated by applicants were accurate, which provide a service to builders, municipal officials, and property owners who wish to develop their land (Table 2).

Table 2. Other programmatic decisions, 2004 and 2005 (DEM WPP, 2006)

Decisions	2004	2005
Determined wetland presence and type, or verified wetland edges	91	60
Renewed, modified, or transferred permits, or decided permits were not eligible for renewal, etc.	114	117
Found that proposed projects were significant alterations	38	48
Found that proposed projects were not under jurisdiction, or there were no wetlands present	95	81

Once permits are issued, achieving effective wetland protection is contingent on projects being developed in a manner consistent with approved plans and permit conditions. DEM continued to emphasize the importance of permit compliance by conducting permit compliance inspections. Permitting staff met program targets and conducted 83 and 69 permit compliance inspections respectively during 2004 and 2005. The calculated permit non-conformance rates were 16 percent and 22 percent, based on the total permits issued in those years. As reported in 2004, common permit nonconformance actions continue to include the following: administrative conditions are not met (including recordation of permits); erosion controls are not properly placed or maintained; clearing takes place beyond the approved limits of disturbance; seasonal construction restrictions are not met; and post construction maintenance commitments are not adhered to (R. Chateauneuf, DEM, pers. comm., 2004). DEM will be continuing inspection activities and will also be developing training as part of a larger effort to promote compliance with permits.

The initiative on permit recordation compliance continued during the reporting period, and automated reminder letters were generated and mailed to those who had not recorded their permits within the specified time. Ensuring permits are recorded helps make existing and new property owners more aware of what is allowable on their property, particularly with respect to approved limits of disturbance. Permit recordation has increased from less than 50 percent prior to March 2002 to 79 percent of all permits issued in 2004.

2.2 Permitted Losses and Gains

Rhode Island has adopted a goal of no-net loss of wetlands consistent with that established by the federal government. Over the five-year period of 2001-2005, the state permitting programs have approached but not yet achieved this goal. The permitted net loss of freshwater wetlands by DEM and CRMC over the five years, 2001 through 2005, is 1.3 acres annually, which is an indication that permitted losses are being minimized by the regulatory programs. The state is well aware, however, that greater losses occur due to unauthorized alterations. While some of this loss is identified via compliance programs, not all losses are reported and as a result the state is not able to fully quantify its unauthorized losses.

DEM continues to administer strong avoidance and minimization requirements and the permitted unavoidable freshwater wetland loss during the reporting period was limited to 4.5 acres (Table 3). Over one-half of the loss in 2004 was attributed to the major reconstruction of the state-owned Stillwater Dam that was necessary for safety purposes.

Table 3. Freshwater wetland losses and gains (acres) permitted by DEM in 2004 and 2005, and 5-year trends (FoxPro, 2004 and 2006).

Year	Permitted Loss	Permitted Gain	Net Loss/Gain
2001 *	1.14	0.27	-0.87
2002 *	0.65	0	-0.65
2003 *	0.10	6.4	+6.3
2004	3.47	0	-3.47
2005	1.04	0	-1.04
Total	-6.40	+6.67	+0.27

*The 2001-2003 data are an estimate due to some reporting inconsistencies regarding losses associated with isolated wetlands that were corrected during 2003.

In 2002, the DEM and permitted a large proactive restoration project at the site of the former Lonsdale drive-in, along the Blackstone River in Lincoln. The restoration project proposed the creation of seven

acres of mixed vegetated wetland and open water, in addition to other habitat types, in an area that was historically floodplain forest. The as-built plans, dated October 2003, indicate that 6.4 acres of wetland were constructed and this wetland gain is reported in Table 3 for the first time.

Normal farming and ranching activities carried out by farmers are permissible at the discretion of farmers in accordance with best management practices, and provided that adverse effects to wetlands are minimized (R.I.G.L. Section 2-1-22 (i-j)). In the case of construction of new farm facilities, such as ponds, drainage structures or roads, the DEM Division of Agriculture is the lead permitting authority, provided that the project will not result in a significant alteration of wetlands, in which case permitting authority rests with the DEM Wetlands Program. No data are readily available regarding the number of activities undertaken by farmers in wetlands, or the extent of loss or gain associated with farming-related projects or applications. This data will be sought for the next reporting period.

Since August 1999, CRMC has regulated activities within freshwater wetlands in the vicinity of the coast and has reported losses over six years (Table 4). The loss in 2000 was associated with construction of water quality basins in the Narrow River watershed, and some restoration of the impacted wetland did take place (A. Silva, CRMC, pers. comm., 2003). The CRMC and DEM both permitted loss in 2005 associated with a RI Department of Transportation project in Charlestown. The acreage is included with the CRMC data.

Table 4. Losses and gains (acres) of freshwater wetlands in the vicinity of the coast permitted by CRMC (CRMC, 2002 and 2006).

Years	Permitted Loss	Permitted Gain
1999 and 2000	1.51	0
2001	0.16	0
2002	0.04	0
2003 thru 2005	0.24	0
Total	1.95	0

In summary, DEM and CRMC permitting programs have been effective at limiting the unavoidable loss of freshwater wetlands over the last five years. Except for the restoration of the Lonsdale drive-in property, which yielded a net gain of 6.4 acres of freshwater wetland, neither agency has reported substantial freshwater wetland gains either proactively or in association with development projects. DEM does not currently require compensation of unavoidable freshwater wetland losses, but does permit compensation based on federal requirements. The CRMC requires compensation for loss of coastal and freshwater wetland according to the Coastal Resources Management Program Section 300.12 (1996). There is no data from either agency regarding the extent of permitted alteration of the adjacent 50-foot perimeter and the riverbank wetland areas.

2.3 Compliance, Inspection and Restoration

The DEM Office of Compliance and Inspection (OCI) Wetland Compliance Program responds to complaints received from the public and investigates unauthorized alterations such as cutting, clearing, grading, filling, excavating, and construction within wetland areas. The Program has received an average of 501 wetland complaints per year over the past five years (Table 5). In 2004, Unfounded Complaints (where no violations were found) and complaints that resulted in No Action taken (very minor alterations were found) totaled 60% of all complaints received. Responding to unfounded complaints represents a huge investment of time and effort that takes away from other investigations and actions. In addition, complaint investigation is time-consuming and complex due to the varied nature of wetlands, land

conditions, land ownership and regulatory requirements. Table 5 summarizes the number of complaints received, actions taken and not taken, and penalties collected during the past five years.

Table 5. Freshwater wetlands complaints and enforcement actions by DEM in 2004 and 2005, and 5- year trends (DEM OCI, 2006)					
Complaints	**2001**	**2002**	**2003**	**2004**	**2005**
Complaints received	524	526	489	479	505
Number (%) of unfounded complaints	112(21)	243(46)	119 (24)	162 (34)	157 (31)
Number (%) of no action taken (minor violation)	-	-	-	125 (26)	98 (19)
Number of investigations	554	477	446	426	464
Total inspections	901	943	922	940	854
Actions					
Informal actions*	107	82	71	41	43
Formal actions**	23	25	17	13	16
Total actions	130	107	88	54	59
Penalties collected	$16,005	$63,850	$26,828	$29,190	$49,750

* Informal actions do not result in an enforceable order or assessment of a penalty. For the most part, these actions include warning letters, letters of noncompliance, and Notices of Intent to Enforce.
** Formal actions are usually in the form of a Notice of Violation (NOV) that are recorded in the land evidence records of the appropriate Town or City. Such actions advise the respondent of the alleged facts surrounding the case, the statutes and regulations that are alleged to have been violated, the requirements necessary to meet compliance, and the assessment of an administrative penalty.

The lower total number of actions taken in 2004 and 2005 (54 and 59, respectively) compared to years 2001-2003 represent an effort by the Program to address outstanding restorations. It also reflects lower staffing levels. The Program tracks the area of unauthorized alteration of wetland and the area that is restored once the alteration has been halted (Table 6). The most common unauthorized alterations are clearing. As a result, most restorations require the respondent to allow an area to naturally revegetate. The more serious violations require the removal of structures and fill and the extensive planting and stabilization of the altered wetland (DEM OCI, 2005). Compared to 2001-2003 restorations (n = 31, 42, 41, respectively), there were 64 and 54 restorations undertaken in 2004 and 2005, respectively.

Approximately 14-acres of wetland were altered by clearing, grubbing, filling or draining without a permit during the years 2004 and 2005. More than forty-three acres of wetland were restored. The restored acreage also correlates with violations from previous years because of the time it takes to enforce and complete restoration. This data reinforces the importance of permit and complaint inspections to help reduce unauthorized alterations. It is difficult to assess the impact of the temporary loss of wetland functions while an area is revegetating.

Table 6. Areas of unauthorized alteration and restoration (acres) in 2004 and 2005, and 5-year trends (DEM OCI, 2006)					
Unauthorized alterations	**2001**	**2002**	**2003**	**2004**	**2005**
Wetland, including rivers and streams	5.0	6.4	11.2	2.1	1.5
Perimeter, riverbank, and floodplain wetland	9.6	12.9	8.1	6.2	3.9
Restoration					
Wetland	2.7	3.6	2.3	12.7	11.0
Perimeter, riverbank, and floodplain wetland	3.4	5.5	4.4	10.8	8.9

During 2004, one of the major compliance accomplishments was the restoration of a shrub/pond wetland complex owned by the City of Woonsocket. The failure of a 48-inch discharge pipe had caused a steep hillside to wash out causing a thick blanket of sediment to cover almost two acres of wetland. The sediment ranged from several inches to 4 feet deep (several thousand cubic yards) throughout the wetland area. After a huge investment of time and money, the City of Woonsocket completed the removal of all sediment in the Wetland Complex.

In 2005 another major restoration occurred in the form of a replacement-forested wetland in the Town of Cumberland. A house was mistakenly built upon approximately 0.2-acres of Forested Wetland. In lieu of removing the house and reconstructing the small isolated wetland, a half-acre mitigation mound and pool wetland was created adjacent to another forested wetland area on the property. The Respondent's environmental consultant will be monitoring the wetland creation for the next several years until such time that the wetland creation is considered a success.

2.4 Regulations and Policy Development

DEM continued to implement streamlining recommendations of the Department's Wetland Task Force (Final report, 2001) during the reporting period. The DEM *Rules and Regulations Governing the Administration and Enforcement of the Freshwater Wetlands Act* have been revised via a comprehensive multi-year project with the overall objective to make them more transparent to all users, and to introduce some new provisions and procedures aimed at improving processing. Working with stakeholders two safety-related exemptions regarding dam maintenance and repair and maintenance of wetland vegetation at airports have also been proposed. DEM convened members of the Task Force in January to March 2004 and in July 2006 to present and solicit comments on the draft rules. Many valuable comments were received and have been considered for the final draft.

In 2005 the DEM proposed pilot revisions to the wetland and ISDS regulations to provide for an optional fee-based process to accelerate the processing and decision-making on some non-permit applications, based on the staff's willingness to work overtime on these applications. These draft revisions have not advanced to date.

The DEM and CRMC continued to coordinate, primarily at the managerial and supervisory levels, about the freshwater wetland jurisdictional division that has been in place for seven years. An interagency meeting was conducted in 2006 largely regarding the applicability of the review criteria on small lots. Also during the reporting period some uncertainty was expressed by applicants regarding the projects that straddle the jurisdictional boundary and by the agencies regarding authority for review of non-farm related projects on property owned by farmers.

The CRMC revised its freshwater wetland regulations in 2005 in response to a controversial decision by the Council to permit the construction of a house on a lot that was largely freshwater wetland (the decision was subsequently retracted). The revised CRMC regulations prohibit the alteration, filling or grading of any tributary or tributary wetland that is associated with a coastal wetland or coastal system, unless it is necessary to access otherwise buildable land and when no reasonable alternatives exist. In such cases the applicant will be required to mitigate the area of wetland lost on a 2 to 1 basis.

2.5 Monitoring and Assessment

Monitoring and assessment is an important part of all resource protection programs. Rhode Island made progress during this reporting period by developing and taking initial steps to implement the state's first strategy for monitoring and assessment of wetlands. To fulfill Clean Water Act requirements to report on wetland condition in addition to reporting on net loss and gain of wetland area, DEM with grant support

from EPA and technical assistance from NEIWPCC, developed a draft Wetland Monitoring and Assessment Plan (NEIWPCC and DEM, 2006). This plan, expected to be incorporated as an element of the state's Comprehensive Surface Water Monitoring Strategy (DEM OWR, 2005) is currently under review by the RI Environmental Monitoring Collaborative.

With limited financial and human resources to implement systematic monitoring, DEM recognizes the need try to make efficient use of existing methods, and apply existing information about wetlands in RI where possible. In developing the plan, DEM reviewed monitoring levels and methods from other states to determine which could be applied in Rhode Island, and also gathered information about wetlands in Rhode Island, creating a database of research and information that could be applied to long term and short term monitoring plan objectives.

This initiative has presented an opportunity to bring together wetland professionals and scientists to develop monitoring objectives in partnership with DEM. Organizations such as The Nature Conservancy of RI (TNC), the RI Natural History Survey, the University of Rhode Island, and the EPA Atlantic Ecology laboratory in Narragansett are currently gathering data and information about wetlands, and see a need for more systematic monitoring by the State.

The plan for wetland monitoring and assessment was developed with an emphasis on how information might be utilized and applied to improve protection and management. The goal was to create a comprehensive list of issues, needs, and applications to use as a guide, and to update periodically, as the program develops. The initial list was organized into categories that reflected potential threats to wetland condition, data needs, and management applications of wetland monitoring and assessment data. Long and short-term objectives for the plan were then identified by reviewing priorities suggested by partners, and by determining current DEM management priorities.

Systematic monitoring and assessment of wetland condition will, over time, produce necessary data to help evaluate management decisions for wetland protection. In the longer term, it is essential to understand cumulative impacts to wetlands, which result from land-use changes, loss of protective buffers, invasive species, water withdrawals and other factors.

In the first year of implementation during the reporting period, NEIWPCC assisted DEM and performed a tier 1 analysis to characterize the extent of wetland within proximity to existing community wells. There are 76 wells in stratified draft with a pump rate of 100 gallons per minute or more. The Department of Health requires a protective zone of 400 feet around each well. A subset of the data indicates that 39 percent of the area within the 400-foot radii of 41 of the 76 wells are wetlands (D. Pelton, DEM, personal communication, 2006). NEIWPCC also assisted DEM and piloted two rapid wetland assessment methods on publicly owned wetlands primarily in the Woonasquatucket River watershed. Over five hundred acres of wetland were assessed.

Discussion of landscape scale wetlands assessment (tier 1) invariably leads to a discussion of the limitations of the existing RIGIS wetlands coverage (1988) (Miller et al, 2001). The absence of positionally accurate freshwater wetland maps limits RI's ability to undertake some special projects, however, adequate funding for mapping remains a constraint. During the reporting period, the Habitat and Resource Panel Final Report (2004) of the Governor's Narragansett Bay and Watershed Planning Commission and two subgroups of the RI Environmental Monitoring Collaborative supported using large scale color infrared imagery to accomplish statewide wetland mapping. The U.S. Fish and Wildlife has recently announced a project to update the RI National Wetlands Inventory maps for the state (R. Tiner, U.S.F.W.S., pers. comm., 2006) using the best available imagery.

2.6 Restoration

The DEM Office of Water Resources formed and officially announced (2006) the Water Quality and Wetland Restoration Team (WQ/WR Team) to provide enhanced preapplication assistance and to encourage beneficial restoration projects. The team, which is composed of staff from various disciplines in Water and the Department, assists applicants with their designs to optimize restoration goals and to ensure projects meet the regulatory requirements. The Team coordinates with the CRMC and the US Army Corps of Engineers as needed. The Team has reviewed and assisted on approximately 43 projects in 38 meetings over ~3 years (L. McGreavy, pers. comm., 2007, DEM).

The CRMC, with the assistance of the Technical Advisory Committee, continued to administer the *Coastal and Estuary Habitat Restoration Program and Trust Fund* (R.I.G.L. Section 46-23.1) that is funded by an annual legislative appropriation (M. Higgins, formerly CRMC, pers. comm., 2006). Similarly, the DEM Sustainable Watersheds Office administered state bond funds for riparian restoration projects funded from the *Open Space, Recreation, Bay and Watershed Protection Bond* approved by voters in 2004. In the first year DEM awarded eight grants totaling $154,000, three of which were awarded to the Woonasquatucket River Watershed Council for projects in Providence and Smithfield.

Also during the reporting period, the Narragansett Bay Estuary Program (NBEP) coordinated a project funded by DEM Aqua Fund and EPA Region 1 to identify additional coastal wetland sites for potential restoration in the vicinity of Narragansett Bay (H. Cottrell, formerly NBEP, pers. comm., 2006). Using aerial photo interpretation and fieldwork 236 project sites were inventoried totaling over 4000 acres having some potential for restoration. A CD-ROM product entitled *Narragansett Bay Coastal Wetland Restoration Analysis-Inventory of Potential Restoration Sites, Wetland Buffers, and Hardened Shorelines* contains printable GIS maps, acreage summaries, technical reports, and downloadable spatial data on coastal wetlands and shoreline condition for 26 Bay communities in RI and MA (NBEP Report No. 04-121).

Other publications and other agency websites have provided news releases, summaries and photographs of several sizable and noteworthy coastal wetland restoration projects undertaken and completed during the reporting period including Town Pond, Portsmouth; Allin's Cove, Barrington; and Walker Farm, Barrington. These projects were accomplished under the leadership of sister agencies and organizations with multiple federal, state, and local partners and funding sources.

2.7 Outreach

In cooperation with the Department of Administration, the DEM now provides for public wetland application status checks via the Internet (A. Richardson, DEM, pers. comm., 2006). The free service, which is available 24 hours a day and is updated daily, allows applicants the ability to track the progress of individual applications by querying the application number, owner's name, project name, or location. This online service tracks all new applications as well as applications dating back to the mid-1990s. The current application status and the dates of all major actions are provided thereby helping the public become more efficiently informed.

In two of the reporting years, the DEM Wetlands Programs, with NEIWPCC assistance, spearheaded participation by other DEM offices and EPA Region I at the RI Builder's Association Home Show at the RI Convention Center for the second and third years. The programs staffed a 10 by 20-foot booth for five days and distributed 7,500 pieces of information in 2004 and 6,000 pieces in 2005. The booth was an excellent opportunity for the public, especially those purchasing land with wetlands or those expanding their homes, to gain a better understanding about permitting, to meet staff, and to ask questions in person. Many teachers also visited the booth. The Home Show drew over 30,000 people each year and provided a

terrific opportunity to showcase wetland protection. Due to the temporary loss of NEIWPCC staff, no major public event was undertaken in 2006; however, the Program did participate in events and speaking engagements coordinated by other groups.

The primary outreach publication during 2004 through 2006 continued to be the ongoing development of the *Wetland Best Management Practices Manual*. The objective of the Manual is to provide a better understanding of acceptable and wetland friendly designs and practices that can be used when preparing an application submittal for DEM. The Manual, which is organized around project types, is being developed with a DEM technical team and progress was delayed somewhat in 2005 by staff vacancies; however, the manual is currently on track for final review and completion.

It is difficult to assess the effectiveness of the wetland outreach initiatives completed during the past five years. All materials and events have been very well received and publications and program participation continue to be in demand. Fifty percent of the permit applications received are permitted based on the initial submission (R. Chateauneuf, DEM, pers.comm, 2006), which speaks to the quality of the applications.

3.0 WETLAND PROTECTION AND CONSERVATION

3.1 Wetland Protection by Land Acquisition or Permanent Easements

The permanent protection of high quality wetland by acquisition of easements or land title is a highly effective strategy. Over the past decade, the number of land trusts active in Rhode Island has grown and significant investment has been made is open space acquisition. The DEM Office of Planning and Development recently completed updating the data layer for protected land in GIS. This data layer includes not only public acquisitions by federal, state and local government, but also lands protected by land trusts, water suppliers and conservation non-profit organizations. Additionally, the data layer includes those portions of developments, including subdivisions, in which towns have required that land be set aside in its natural state and restricted from future development. The availability of this data layer allowed a summary of the area (acres) of palustrine and estuarine vegetated wetland that is protected in this manner. The analysis revealed that on a statewide basis approximately 28 percent of all palustrine and estuarine vegetated wetland area is located on protected lands. The area of specific wetland types on protected lands is in Table 7.

Table 7. Wetland Area Present on Protected Lands (P. Jordan, DEM DPD, 2007)

Wetland Type	Acres
Palustrine Emergent Fen or Bog	117
Palustrine Emergent Marsh /Wet Meadow	1096
Estuarine Emergent Wetland	1835
Estuarine Scrub-Shrub Wetland	52
Palustrine Forested Wetland: Coniferous	4114
Palustrine Forested Wetland: Dead	81
Palustrine Forested Wetland: Deciduous	16508
Palustrine Scrub-Shrub Swamp	2494
Palustrine Scrub-Shrub Fen or Bog	795
Total Wetland Area on Protected Lands	27,092
Total Statewide Palustrine and Estuarine Wetland Area*	95,708

Without POW, ROW, LOW, and EOW

State land acquisition for conservation purposes is executed via the DEM Office of Planning & Development (DEM-OPD). In 2004 and 2005, the DEM-OPD acquired fee title or Conservation Easements over 2,610 acres of land in the Rhode Island (Primiano, 2006). The acreage represented 33 separate land protection projects in 19 communities. The acquisitions included 254 acres of various wetland types (Table 8). The DEM works in partnership with local land trusts, private non-profit agencies, and municipalities to protect the State's natural resources, watersheds, farmland, forestlands, and wetlands. The State's primary focus remains on efforts to expand boundaries of existing protected land holdings and create linkages where possible (Primiano, 2006). Funding sources for these projects come from a wide variety of sources, including state open space bond issues, federal grant programs, municipal funds, and foundation funds.

Table 8. Wetland acquisition by DEM in 2004 and 2005, and 5-year trends (acres) (P. Jordan, 2004 and 2006)

Wetland type	2001	2002-2003	2004-2005
Emergent Wetland: Fen or Bog	0	2	5
Emergent Wetland: Marsh/Wet Meadow	65	12	23
Scrub-Shrub Swamp	38	45	37
Shrub Fen or Bog	2	4	11
Forested Wetland: Coniferous	28	67	5
Forested Wetland: Deciduous	352	576	170
Estuarine Emergent Wetland	12	9	3
Estuarine Scrub-Shrub Wetland	0	0.8	0
Marine/Estuarine Unconsolidated Shore	9	2	0
Marine/Estuarine Rock Shore	0	0	0
Total area	506	718	254

3.2 Conservation Development

Through planning, publications and training the DEM Sustainable Watersheds Office has actively promoted Conservation Development as a way to allow growth while avoiding impacts to the environment (Millar, 2006). A goal of conservation development is to protect 50 percent of a property as open space including maintaining travel corridors for wildlife, forest blocks, and vegetated buffers along wetlands, streams, and ponds. Greenspace plans and mapping have been completed in the Pawcatuck River, Scituate Reservoir, and Woonasquatucket River watersheds. Wetlands within 2000 feet of a river or stream were identified as part of core biodiversity areas that are important to protect (S. Millar, DEM, pers. comm., 2004). Wetlands not within 2000 feet were identified as isolated resources also in need of protection. Publications and training stress the need for municipalities to use their zoning authority to guide growth away from wetlands and other resources, and ordinances are in various stages of development in 13 towns, four of which are supported by an EPA wetland grant (S. Millar, DEM, pers. comm., 2006). The fourteen communities are: Burrillville, Charlestown, Coventry, Cumberland, Exeter, Glocester, Hopkinton, New Shoreham, North Kingstown, North Smithfield, Richmond, Smithfield, and South Kingstown.

3.3 Statewide Wildlife Conservation Strategy

The DEM Division of Fish and Wildlife completed a two-year project to develop a ten year Comprehensive Wildlife Conservation Strategy (CWCS) (2005). The Strategy identifies habitats, threats to the habitats, conservation actions, and species of greatest conservation need. The CWCS identified 13 freshwater wetland habitats, two of which, forested and shrub wetland, represent more than 70 percent of RI's wetlands. Degradation from residential and commercial development was identified as the greatest threat to wetlands. Fifty-three freshwater wetland species and 54 freshwater aquatic species of greatest conservation need were identified (Table 9).

Table 9. Freshwater wetland and freshwater aquatic taxa of greatest conservation need (DEM FWS, 2005).

Habitat: Forested, shrub, and emergent freshwater wetlands		
Taxa group	Number	Species
Amphibians	1	Four-toed salamander
Beetles	1	
Birds	16	Including willow flycatcher, northern waterthrush, Canada warbler, prothonotary warbler
Butterflies and moths	28	
Dragonflies and damselflies	4	
Mammals	1	Southern bog lemming
Reptiles	2	Spotted turtle and eastern ribbon snake
Habitat: Springs, rivers and streams, and lakes and ponds (including seasonal ponds)		
Taxa group	Number	Species
Amphibians	6	Dusky salamander, spring salamander, eastern spadefoot, marbled salamander, wood frog, and northern leopard frog
Birds	4	Eastern kingbird, orchard oriole, bald eagle, and osprey
Dragonflies and damselflies	18	
Fish	16	
Mammals	1	Common water shrew
Mollusks	8	
Reptiles	1	Wood turtle

3.4 Natural Communities of RI

The DEM Natural Heritage Program and The Nature Conservancy of RI completed a review draft natural community classification system for RI based largely on plant species and assemblages (Enser and Lundgren, 2005) as a tool for land use managers, biologists, landowners and others. The Palustrine system includes open and forested freshwater wetlands on mineral and organic hydric soils. The Estuarine, Riverine and Lacustrine systems include other freshwater and tidal wetlands, flats and deepwater habitats. While this classification was not developed as a wetland mapping system per se, it illustrates the variety and complexity of RI's wetlands and may be beneficial in the context of monitoring.

4.0 CONCLUSION

Rhode Island has continued to build and implement a comprehensive state wetlands program. Overall, the DEM and CRMC regulatory programs promote policies to minimize adverse impacts on wetlands and are successful in limiting authorized direct loss of wetland, nearly achieving the state's no net loss goal over 5 years. There are challenges including protecting wetland functions and values from cumulative impacts of land development, from hydromodifications, and from unauthorized alterations. Achieving effective wetland protection is also contingent on projects being developed in a manner that is consistent with the approved plans and permit conditions. The state is aware that unauthorized wetland alterations do occur and that some loss may be unknown and undetectable. The programs are challenged by limited financial and human resources, including a 25% permitting staff vacancy level for 2 years. Wetlands and other valuable natural resources are protected through a strong statewide network of conservation professionals, and recent DEM analysis revealed that 28% of the area of all palustrine and estuarine wetlands are on protected lands. With competitive funding from EPA for special projects and with the assistance of NEIWPCC, the University, and other partners, Rhode Island has continued to pursue regulatory improvements, to build on successful outreach, to draft a wetland-monitoring plan, and to pilot rapid assessment methodologies. Future projects will entail policy development, vernal pool protection, assessing project outcomes in the field, and training.

5.0 APPENDICES

5.1 Wetland Pilot Demonstration Projects

In 2005, in response to a national competition, DEM was awarded nonregulatory and regulatory Wetland Pilot Demonstration Grants from EPA Headquarters. The approved projects reflect federal and state wetland program priorities. Following is a brief summary of the status of the Year 1 (FY05) projects (as of Jan. 2007).

Table 5.1. Status of Year 1 (FY05) Wetland Pilot Demonstration Projects (Jan. 2007)

NONREGULATORY		
Title	**Project partners**	**Status**
1. Wetland monitoring and assessment	NEIWPCC	To characterize extent/type of wetland in proximity to community wells statewide, NEI completed a Tier 1-assessment utilizing existing RIGIS data. A memorandum summarizing the study results is under review by DEM. Briefly, the data indicates that 39% of the surface area w/in the 400-foot radius of selected wells in stratified drift that met the study criteria is freshwater wetland. Development of watershed-based wetland profiles from existing data as a baseline to evaluate change and as an information transfer tool was partially completed. Wetland type/ extent have been formatted for most watersheds. Land use/land cover data are partially complete. Some standard text has been drafted and is under review. NEI assisted the DEM evaluate two wetland rapid assessment methods. Using methods from Ohio and Delaware over 500 acres of wetland were assessed at 27

		wetlands. The field data are summarized in an Excel spreadsheet and a draft report (Pelton et al, 2006) was completed and is under review by DEM.
2. Public outreach and training	NEIWPCC	This project did not move forward during year 1. It was rescheduled somewhat to coincide with rule promulgation in calendar year 2007. A contract with NEI for outreach assistance has been approved.
3. Prioritizing protection of vulnerable wetlands in the Queen's River watershed	URI CELS	URI research associates completed a Tier 1 analysis on over 250 vernal pools to ID those that met criteria for further field study. One hundred thirty five pools were visited and 102 were assessed. A draft report and GIS coverage has been produced including id of priority hotspots for protection (Mitchell et al, 2007). The results are under review by DEM.
REGULATORY		
Title	**Project partners**	**Status**
1. Evaluation of Outcomes - CRMC	Contract	A contract has been approved and the consultant selected to complete the modifications to the CRMC data management systems for improved tracking of wetland losses and gains. Additional wetland permit search functionality will also be completed.
2. Enhancing use of science in decision-making	Academic contract	This project has been scheduled for calendar year 2007.
3. Evaluation of outcomes-unauthorized losses at permitted sites	NEIWPCC	This project has been rescheduled to calendar year 2007 and a contract with NEI to provide technical assistance has been approved.

5.2 Status of Wetland Task Force (WTF) Recommendations (Jan. 2007)

Following are tables modified from the Wetland Task Force Final Report (March 21, 2001) including the status of ongoing and completed tasks and projects. Tasks and projects that were completed and reported on in the *Year-End Report* (2001) and the *Status and Trends Report* (2004) have been deleted.

WTF Table 2. Projects Common to the Wetlands Task Force Recommendations and the DEM Work Plan		
Project Description	**Issue Originator**	**Status**
Continue to develop Freshwater Wetland Restoration Strategy	EPA, DEM WW-5d, WWO-2a	Woon. Wetland Restoration Plan and website completed 03/05. Summary for Strategy pending DEM.
Complete background research and outline issues for statewide Wetland Conservation Plan. Coordinate planning with other Office of Water Resources plans.	EPA, DEM WW-5d	Postponed.

WTF Table 3. Proposed Freshwater Wetland Rules Development		
Rule	**Proposed Revisions #2**	**Status**
8.04	Revise the fee schedule to simplify both the presentation and the way the fees are calculated. Eliminate the fee additives (per sq. ft. of alteration, etc.). Eliminate fees for municipalities. Otherwise strive for revenue neutral fees.	Complete. (Municipal fees will not be eliminated.)
6.00 through 14.00	Reorganize the rules for readability and clarity: improve application requirements and process descriptions, improve table of contents, and add an index. These revisions will be more presentation than content.	Complete.
6.00 through 14.00	Remove rules that address internal administrative operating procedures and create a new management procedure document as appropriate.	Analyzed.
3.00	Expand administrative findings section to discuss the significance of the bordering areas (perimeter wetland and riverbank wetland) in scientific terms	Analyzed.
8.07 B. 8.07 C.	Delete these rules and develop a policy whereby meetings with the Program (as opposed to w/ OTCA) will be scheduled and conducted.	Complete.
Rule	**Proposed Revisions #3**	**Status**
----	Develop new *Determination of Applicability* application for those ~75 applicants per year who file a *Request for Preliminary Determination* and receive determination of non-jurisdiction. Roll applicant into the Preliminary Determination process if it is determined that an alteration is proposed.	Completed
----	Develop new Abbreviated *Request for Preliminary Determination* application (PD1) with reduced requirements for specific projects including planting projects and alterations to already developed residential lots.	Completed
	Develop new regulatory timelines to approve complete applications, by application type. Investigate refunding permit fees, if review times are not met.	Analyzed
14.00 & App. 5	Evaluate site plan requirements, particularly for small projects such as single family residential.	Completed
6.13	Consider revising exemption to allow others beside DEM FWS to undertake conservation projects as exempt activities or as a "FONSI"	
7.01 B	Develop guidelines, BMPs, and/or performance standards for major projects outside of wetland jurisdictional areas that have the potential for significant wetland impacts.	BMP manual drafted.
6.03L	Clarify the exemption on replacement of shoreline structures as to "in-kind" materials.	
----------	Evaluate the CRMC fact sheet on program differences and revise rules as agreed upon. For example, the length of time permits are valid differs.	Evaluated
6.00	Revisit rule 6.00 and consider expanding the list of exempt activities.	Completed
App. 1	Revisit appendix 1 and consider expanding the list of activities considered insignificant alterations.	Considered.
5.00 ++	Develop and add buffer zone and setback rules.	Research completed.
Rule	**Proposed Revisions #4**	**Status**
Several	Revisions to facilitate water quality improvement and wildlife habitat projects (phase 2)	Completed - WQ/WR team.

WTF Table 4. Final Policy Recommendations		
Policy Changes Description	**Project Originator**	**Status**
Develop policy that encourages water quality and wildlife habitat projects. (Phase 1 regulations)	BPE-4; DEM	Water quality and wetland restoration team goals and objectives.
Develop trial policy for pre-application field meetings for problem wetland edges.	C-3	Field meetings conducted on case-by-case basis.
Develop policy for pre-application meetings with Program	IM-1	Completed in rules.
Establish ISDS / Wetlands coordinated field review for projects that are near but outside regulated wetland.	Alt. C-2	Completed rule allowing for concurrent applications.
Develop policy that promotes planting projects with recommended species and Best Management Practices	DEM, BPE-2	Completed rule exemption.
Develop buffer zone and setback concept: a) Develop permit condition that identifies area to remain undisturbed as a buffer zone; b) Buffer zone mitigation and setbacks especially for residential lots.	CRMC-	a) Completed. b) Pending.

WTF Table 5. Final Administrative Recommendations		
Administrative Changes Description	**Project Originator**	**Project Completion Date**
Revise the application form to encourage applicant's address to improve service to applicant; also add checkoff for CEC projects.	DEM	Due with phase 2/3 rules– spring 2007.
Redesign (simplify) existing application package (w/ Rules 3).	DEM	Due with phase 2/3 rules – spring 2007.

WTF Table 6. Final Outreach Recommendations		
Project Description	**Issue Originator**	**Project Completion Date**
Make list and location of pending applications available on the DEM Website and update frequently, especially for municipalities.	O&E-1&5c	Completed.
Update wetlands permit questions & answers guide after Phase 3 Rules have been promulgated.	DEM; O&E	Due with phase 2/3 rules – spring 2007.
Create guidebook with photos and field descriptions of RI wetland types for property owners (pending funding)	DEM	Pending future funding
Create *Wetland Best Management Practices Manual* with avoidance and minimization techniques; sample designs, etc.	BPE-3 WW-6B	Draft complete.