



Rhode Island Department of Environmental Management



2001 Annual Report

Protecting, Managing and Restoring the Quality of Rhode Island's Environment

Director's Message

We are pleased to present our annual progress report. In the year 2001 we saw major new developments, made good progress towards many of our goals, were set back in other areas, and as always encountered new challenges.

Major developments stimulated legislation on dredging and fisheries management. After years of unproductive debate, legislators, agencies, industry representatives and environmental groups agreed on an approach to allow much needed dredging projects to move ahead, from the huge Providence River project to much smaller

scale dredging by marinas. Similarly, fisheries legislation carried forward the process that started in 2000 led by the Coastal Institute to develop a new commercial licensing system. Spurred by the legislation, agency staff, fishermen, dealers, academics and legislators spent many hours debating management issues and developing proposals. We hope that a licensing system can be implemented this year that will finally allow the moratorium on new licenses to be lifted, and give us better tools to manage fisheries effectively and fairly.

Other significant legislative advances were made with respect to boating safety, phasing out mercury in products, lower tax rates for open space, and tax incentives for historic preservation that will also encourage smart growth and urban revitalization. On the down side, much needed reform of our dam safety program was defeated, and funding for habitat restoration again failed to secure enough meaningful legislative support. Despite these setbacks we're pushing forward under the motto "against all odds."

Regulatory achievements included stronger air quality rules for low emission and heavy duty diesel vehicles; amendments to our wetland rules to improve consistency with the Coastal Resources Management Council; and stormwater management regulations that will be a keystone of efforts to control non-point sources of pollution in our watersheds. Permit streamlining task forces completed work on wetlands, septic systems and waste management, while others started on air quality and dredging.

Last summer, the Department published its second two-year work plan, coordinated with the federal Environmental Protection

Agency to produce mutually supporting sets of goals and strategies. Recently, the wetlands program completed its first Year End Report, which not only documents reductions in permitting delays but also evaluates environmental results, i.e. wetland losses and gains. We encourage you to visit our web site where the results of these efforts are posted.

Last year was a record-setter for open space protection, thanks to continued support from state leaders, partnerships with nonprofits and municipalities, and the hard work by staff in the Division of Planning and Development. They embody the concept of doing more with less, which, together with the magnificent results they produced, earned them recognition as Program of the Year.

The discovery of MTBE contamination in the Pascoag drinking water supply presented a major challenge. While residents endured hardship for months, it became clear that local water districts, in particular smaller ones, are not prepared to fulfill their responsibilities in these types of circumstances. Coordinating with other agencies, our emergency response, waste management, wetlands and legal staff worked overtime to develop a response strategy and get clean water to residents, first in bottles and later through a connection to a newly developed and permitted well field in the neighboring Harrisville District. Work will continue for years to clean up the groundwater and a big question remains whether adequate financial and organizational resources are in place statewide to address this kind of situation should it happen again, which is not unlikely.

The aftermath of the September 11 tragedy affected the Department greatly. Our emergency response people played a critical role in the strategy to respond to numerous anthrax scares and are very much involved in broader disaster preparedness planning. The economic impact has worsened the budget crisis to the point where we cannot fill vacancies critical to our programs, let alone develop initiatives. We face a year, maybe several years, where it may be impossible to meet all the expectations created for the Department. We ask for your support and commit ourselves to working energetically and creatively to continue to protect and improve the environment for all Rhode Islanders.

Sincerely,

Jan Reitsma, Director
Bob Ballou, Chief of Staff
Frederick Vincent and Malcolm Grant, Associate Directors
Alicia Good, Terrence Gray and David Borden, Assistant Directors



DEM Division Chiefs



Program of the Year Land Protection

In Rhode Island, the smallest and second most densely populated state in America, we are never far from our open spaces. And we treasure the variety they offer in tight quarters: rocky shores, scenic coastal features with their forts and lighthouses, sandy beaches, historically significant landscapes, working farms and wood lots, the bronze bulls guarding Colt State Park, the Temple of Music at Roger Williams Park, and other important local and state parks. DEM's Division of Planning and Development acquires sites and manages our land protection programs to ensure that our outstanding outdoor recreation facilities and our natural heritage are preserved. Central to achieving these objectives are land preservation partnerships and local recreational grant programs.

Land Preservation

Under division Chief Robert Sutton, the fourteen member professional staff has exceeded performance targets for the last three years (1999, 2000 and 2001). In 2001, preliminary numbers show that the Division, in partnership with numerous federal, local and non-profit entities, protected 2,865 acres of open space, agricultural, forest and recreational lands. Their efforts included thirty-nine land transactions with an appraisal value of more than \$24 million, the highest number of acres and the most transactions accomplished in the last decade. Most importantly the ratio of state to non-state funds in the program was at least three non-state dollars to one state dollar and has been as high as six to one in many projects! Since 1995 the staff helped protect nearly 8,000 acres of open spaces, parks, wildlife habitat, drinking water supplies, farmland and forestland.



Land Acquisition Team (L-R): Joe Dias, Rick Enser, Lisa Primiano, Paul Jordan, Grace Smith, Chief Bob Sutton and Mary Kay .

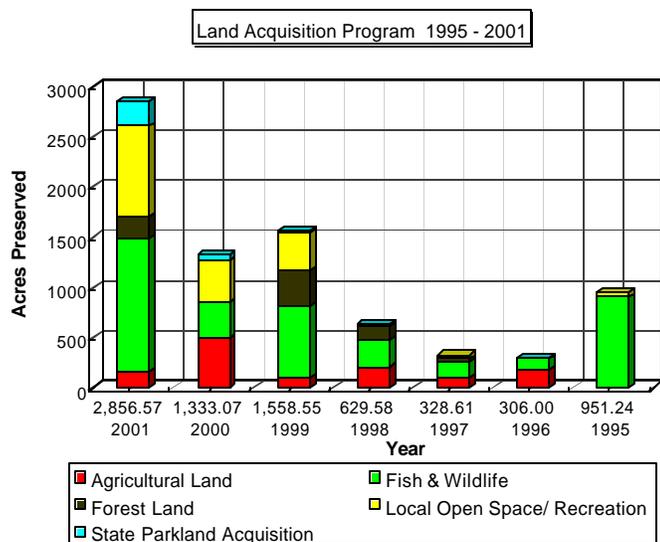
The Department's Land Acquisition Committee, which includes the divisions of Parks and Recreation, Fish and Wildlife, Forest Environment, and Agriculture sets policies and procedures for the program. Legal Services staff perform the legal work to secure title, development rights or easements for each project. The entire process is a team effort.

Local Recreation Grants

Planning and Development also manages a multi-million dollar grants program for municipalities and environmental organizations. In December, Governor Almond announced 43 local recreation grants to 29 communities for much needed recreation facilities across the State. The grants will fund projects including the development of new soccer facilities in Pawtucket and Woonsocket, new middle school playfields in South Kingstown, a horticultural center at Roger Williams Park and a new sports complex in Central Falls. The Division also promulgated new grant rules for local open space projects in 2000 following the successful passage of Governor Almond's \$34 million bond issue for recreation and open space.

The division's tireless efforts to seek out important sites and to facilitate landowners' efforts to preserve open space have added immeasurably to the high quality of life and provided precious greenspace in the Ocean State.

Kudos to Bob and his dedicated staff!



Clean Air



Ozone is formed from emissions of volatile organic compounds (VOC's) from tailpipes, gasoline-burning engines and products such as paints, solvents, and other chemicals, and NOx from burning fossil fuels.

Top priorities continued to be ozone, fine particulate matter and air toxics. In addition, DEM stepped up efforts to assess the likely effects from climate change and develop a long term strategy to reduce greenhouse gas emissions. All of these air quality issues require work at local, state, regional and national levels. They also broaden the scope of our program to include a role in transportation and energy policy debates. And given the need for significant additional emission reductions, there is a powerful incentive to develop smarter solutions such as multi-pollutant controls that produce multiple benefits at a lower overall cost. The new challenges also underscore the importance of non-regulatory approaches including pollution prevention and smart growth strategies.

Ozone

Ozone, which can cause respiratory problems even in healthy people, forms from nitrogen oxides (NOx) and volatile organic compound (VOC) emissions. Other important factors include temperature, wind and time of day. Last summer's weather contributed to high ozone levels from upwind as well as local emission sources, leading to an unexpectedly high number of Ozone Alert Days and the first violation of the federal one-hour standard since 1997. As a

result, Rhode Island must submit a plan to the federal EPA by March 31, 2003 showing how we intend to comply with this standard. This will in fact not be possible unless major sources in upwind states are forced to reduce their emissions that are carried by prevailing winds to the northeast. DEM participates actively in efforts by northeastern states to assure that the federal government stays the course and imposes controls previously committed to. To be successful, however, we must also show our willingness to reduce emissions from local sources, in particular fossil fuel combustion in the transportation and energy sectors. (See Climate Change /Greenhouse Gas Reduction on Page 4.)

Fine Particulates

Evidence continues to mount that fine particles in the air cause significant and costly health problems, especially for children and other sensitive people. A major source is again the burning of fossil fuels, in particular diesel. Therefore, it makes sense to look for solutions that address fine particulates as well as NOx and VOC emissions from vehicles and stationary sources. A key program in that respect is the Rhode Island Vehicle Inspection and Maintenance (I&M) Program. In 2001, about 350,000 vehicles were tested. The resulting repairs to vehicles failing the test reduced emissions of NOx by 48%, VOCs by 70%, and carbon monoxide by 81%. In 2002, tighter inspection standards will lead to more reductions, as will regulations that were promulgated to control emissions from heavy duty diesel trucks and buses, major sources of fine particulate pollution. The need for these measures was underscored when DEM's monitoring results at seven sites across the state showed high concentrations especially in urban areas and, on three days, levels considered to be "unhealthy for sensitive populations."

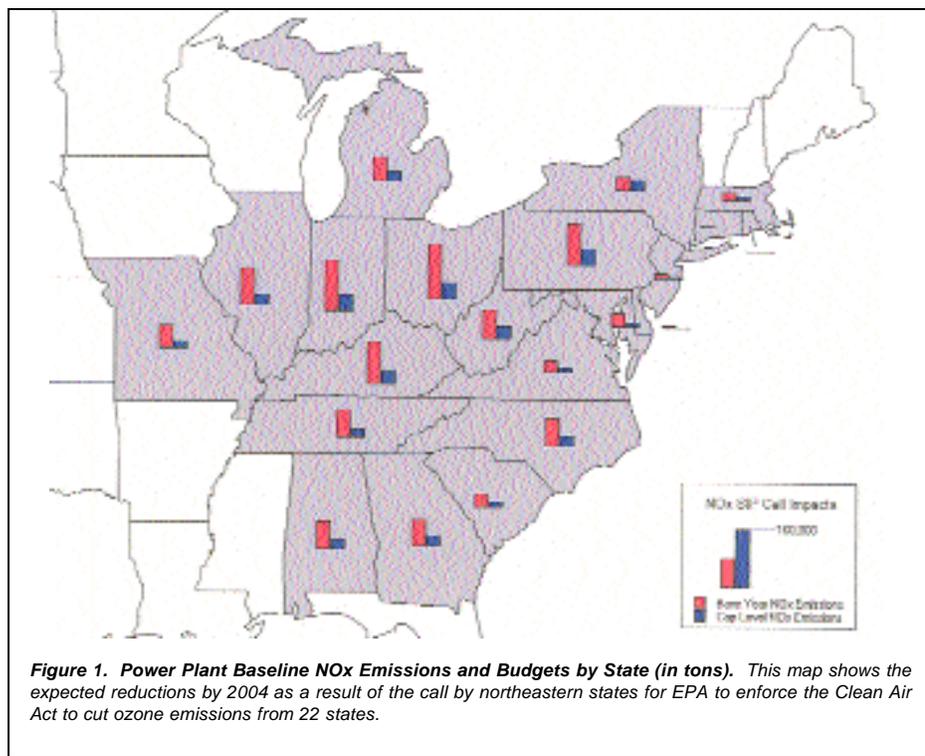


Figure 1. Power Plant Baseline NOx Emissions and Budgets by State (in tons). This map shows the expected reductions by 2004 as a result of the call by northeastern states for EPA to enforce the Clean Air Act to cut ozone emissions from 22 states.

Air Toxics

Although toxic air emissions from industrial sources have dropped significantly since the beginning of DEM's regulatory program in 1988, recent research shows certain toxics persist at high levels in Rhode Island as well as other states. Vehicle emissions, as shown by exceptionally high levels near Route 95 in Pawtucket, contribute to levels of concern and present another reason to reduce emissions from transportation. DEM plans to work with affected communities to determine what can be done to lower emissions by local sources such as industries using solvents and to reduce exposure.



DEM staff member Frank Caliri records results from an air monitoring station at the West End Community Center in Providence. The Station, funded by a \$500,000 EPA grant, is one of five in the Providence Metropolitan area.

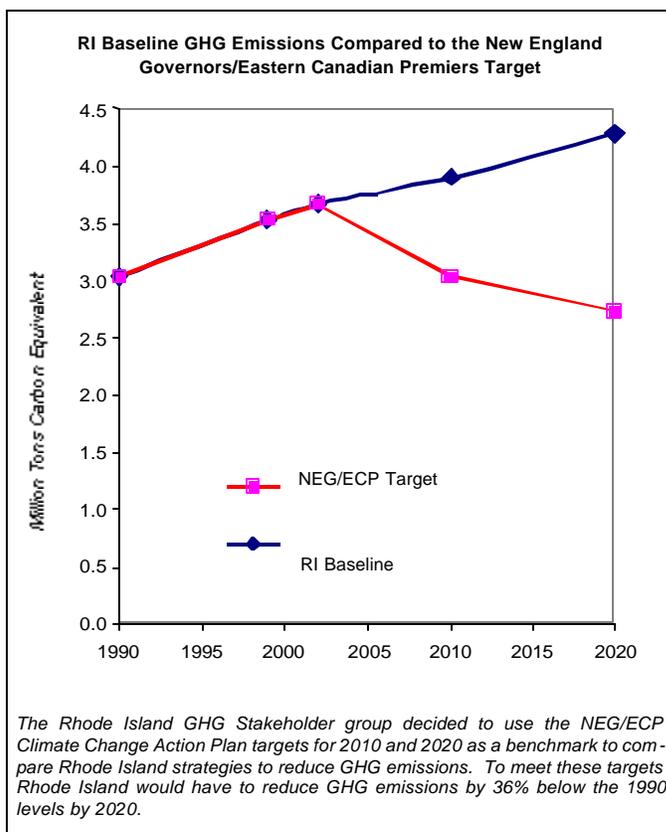
and help develop an action plan by the end of 2002. The plan will focus on how to reverse the trend of increasing emissions and hopefully prevent major impacts. The stakeholder process attracted active participation from other government agencies, industry groups and environmental organizations. Working groups are developing specific recommendations in areas like energy conservation, renewable energy, transportation, smart growth, air pollution controls and solid waste management.

This effort is also part of a much broader initiative in the Northeast. In August 2001, Governor Almond and his NEG/ECP colleagues signed a regional Climate Change Action Plan that sets a regional reduction target of at least 10% below 1990 emissions by the year 2020. Contrary to national policy developments, these jurisdictions also agreed to continue pursuing a four-pollutant control strategy that includes CO₂. For more information, please visit the RI GHG Action Plan web site at <http://rihg.raabassociates.org>.

Mercury in our air and water continues to be a concern as well, even though Rhode Island is on track to eliminate its emission sources by 2003 and is well ahead of other states that still have plants burning coal, municipal solid waste and/or medical waste. Mercury, too, is transported from upwind states and is very much a regional problem. Because emission sources, control technology and other strategies overlap with those for ozone and particulates, Rhode Island and other northeastern states are advocating for a "four-pollutant" rule that includes mercury, instead of the single pollutant approach. DEM participated actively in conferences and work groups to implement the mandate from New England Governors and Eastern Canadian Premiers (NEG/ECP) for this cost effective, multi-pollutant approach and for a phase out of mercury in products. Rhode Island took a giant step forward in 2001 when the General Assembly passed legislation requiring the phase out to begin this year. Reflecting the underlying regional approach, this legislation also calls for a regional clearinghouse and reporting mechanism to facilitate industry compliance.

Climate Change/Greenhouse Gas Reduction

Several initiatives were undertaken last year that reflect increasing consensus that the environmental, public safety and economic impacts from climate change are sufficiently significant and probable to warrant a concerted effort to reduce emissions of greenhouse gases, in particular carbon dioxide (CO₂) and methane. In Rhode Island, DEM is working closely with the State Energy Office and the Governor's Office. We contracted with the Tellus Institute and Dr. Jonathan Raab to compile data, facilitate a stakeholder discussion,



Clean Water

It was a year of ups and downs for water quality. On the plus side, DEM issued approvals for wastewater treatment improvement projects that will reduce the discharge of nutrient and bacterial pollutants; drafted water quality restoration plans in four watersheds; continued work in eight additional watersheds; and finalized regulations for municipal stormwater management programs. Many acres of watershed land were protected through the Open Space Program. On the downside were serious problems with algae blooms, low oxygen levels and bacterial pollution in Narragansett Bay, and methyl tertiary butyl ether (MTBE) contamination of the Pascoag district drinking water supply in Burrillville. The bottom line is that Rhode Island still has a long way to go in assessing ground and surface water resources, and making sure that they meet standards for fishing, swimming and consumption. The need is as urgent as ever, yet funding has been drying up and we may not be able to keep up with demand and meet our goals.

Impaired Waters and Water Quality Restoration

The 2000 List of Impaired Waters lists 116 bodies of water that fail to meet one or more water quality standards, affecting all but three towns in the State (see map-page 6). This list drives our Water Quality Restoration Program with communities and interested parties to identify pollution sources in the watershed and develop strategies to bring pollution to below the “total maximum daily load,” a level at which the water body can absorb pollutants without violating water quality standards. The main pollutants are nutrients (nitrogen and phosphorus) and pathogens (bacteria), but in some areas the concern is with toxic chemicals or metals, or with habitat degradation.

Major sources include wastewater treatment facilities (WWTFs) and combined sewer overflows (CSOs), but an equally important category is non-point source pollution from storm water runoff and failing septic systems. Four water quality restoration plans (WQRPs) have been approved by EPA, seven are complete in draft form, and DEM has begun work on another 27 water bodies (see table-page 6). Each plan takes up to two years of field work and analysis, during which DEM begins a community process to identify pollution sources and develop priorities. Strategies can include stormwater treatment, buffer zones and animal waste management. Although DEM has an ambitious work plan, it lacks capacity to assess

the many bodies of water for which data are still not available to thoroughly evaluate waterbodies for which only limited data are available, or to follow up on each WQRP by monitoring effectiveness.

Nutrients

Nutrient “loading” is associated with discharge from sewage systems but also with stormwater runoff in urban and rural areas, especially



Low dissolved oxygen levels from excess nutrients killed a variety of marine life as well as fish in a fish kill which took place in Greenwich Bay near Chepianoxet Point in June, 2001.

where construction is underway, fertilizers are being used, or animal, including pet, waste accumulates. Major efforts are already being made to reduce pollutant loadings from sewage treatment plants and farms through facility upgrades and “best management practices.” Now more attention must be paid to residential uses. Nutrient overloading is the cause of algae blooms, rapid growth of aquatic weeds, low oxygen levels and fish kills, and noxious odors which were observed in 2001. Annual dissolved oxygen surveys have found low dissolved oxygen levels in parts of Narragansett Bay since 1990.

Pathogens

Bacterial contamination, also from sewage systems and runoff, as well as waste from farm and domestic animals, birds and wildlife, affects both recreational and commercial activities. In 2001, there were 348 beach closure days in 13 bathing areas; and 20,480 acres remained closed to shellfishing. These impacts are a threat to the \$31 million quahog industry and the growing aquaculture industry in Rhode Island.



Toxics

Concentrations of metals exceed levels for healthy aquatic systems in more than 100 river miles in Rhode Island. In several areas metals have built up in river sediments, especially behind dams (which adds another dimension to our dam safety challenges (see Livable Communities). Although contact with the water itself may not be a health hazard, people are advised not to wade in certain areas with contaminated sediments, such as along the lower Woonasquatucket River from the Smithfield/North Providence town line south. Storm water runoff can also contain toxic metals and organic compounds from sources including vehicles and the use of pesticides or herbicides. Since these contaminants can build up in fish tissue, fish consumption advisories are issued when the State believes there is a public health risk, as in the Quidneck Reservoir in Coventry and the Woonasquatucket River. During 2001, DEM worked with the Department of Health to expand advisories to provide more specific guidance for many more waterbodies and species of fish, without discouraging otherwise healthy patterns of fish consumption. The

Department of Health expects to issue a revised advisory in early 2002.

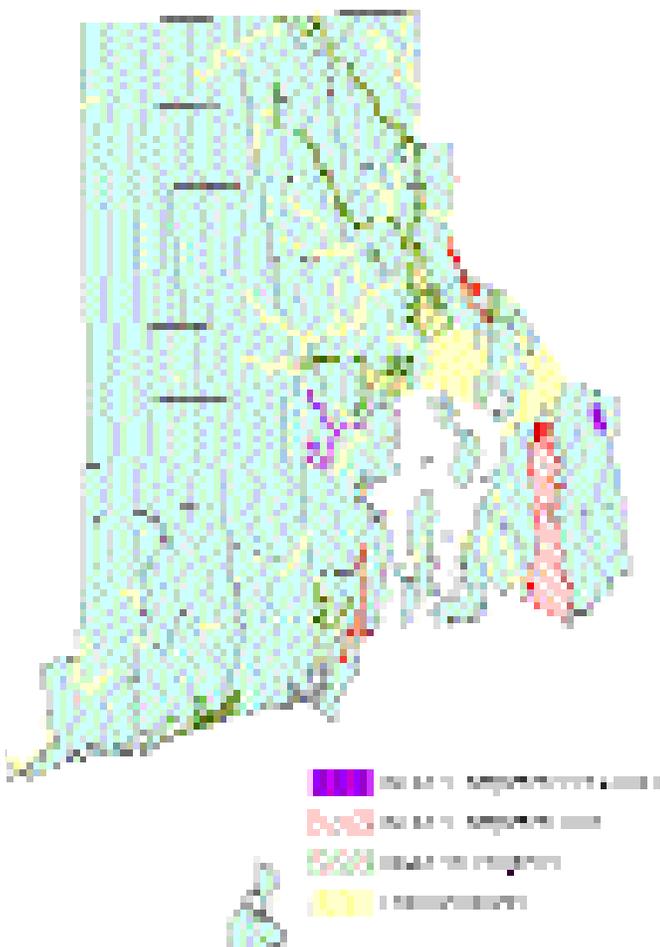
For details on DEM's response to the contamination of the Pascoag district drinking water supply, see Livable Communities.

Wastewater

In 2001, DEM finalized eight wastewater discharge permits. Together with the ten permits issued in 2000, that means we reduced the backlog from 76% to 12% and are on track to eliminate the backlog by the end of 2002. The permits reflect technology advances and stricter standards for treating nutrients and metals. By the end of 2008 we estimate that nutrient removal at eleven WWTFs will reduce the nutrients discharged to upper Narragansett Bay by about 35%. In the Pawtuxet River watershed, improvements to the Cranston, Warwick and West Warwick WWTFs to be completed by December 2004 are expected to reduce nitrogen discharges by 65% and phosphorus discharges by 70%. On the Blackstone River, the Woonsocket WWTF began operating with enhanced nutrient

Water Quality Restoration Plans

as of December 2001



Water Body	Impaired Use	Potential Pollution Sources
Stafford Pond (FA – 5/99)		SS, UR, Ag
Hunt River, Fry & Scrabbletown Brooks (FA-1/01)		UR, Ag
Narrow River, Gilbert Stuart Stream, Mumford Brook		SS, UR, O
Crooked Brook		Ur, Ag, O
Sakonnet River (Portsmouth Park), The Cove (Island Park)		SS, UR
Kickemuit Reservoir		SS, Ur, Aq, O
Barrington & Runnins Rivers		Ur, O
Palmer River		STP, Ur, Aq, O
Sauquatucket River & Pond & Mitchell, Rocky, & Indian Run Brooks		Ur, Aq, O
Sands Pond		O
Ninigret & Green Hill Ponds, Factory Pond & Teal Brooks		SS, UR, O
Greenwich Bay, Apponauq, Buttonwoods, Brushneck, Greenwich & Warwick Coves, Hardig Brook		STP, SS, UR, Aq, O
Providence & Seekonk Rivers		STP, UR, CSO, O
Woonasquatucket River		STP, CSO, SS, UR, O
Mashapaug Pond		UR, O
Blackstone, Mill & Peters Rivers & Valley Falls Pond		STP, CSO, UR, O

Shellfishing Swimming Drinking Water
 Fish Consumption Aquatic Life

STP – sewage treatment plant UR – urban runoff
 CSO – combined sewer overflow SS – septic system
 AG – agriculture O – other
 FA – final approval granted by EPA

removal. Once similar upgrades in Massachusetts are complete, excessive algae growth should be eliminated in this river.

DEM also approved a final plan for almost all of Phase I of the Narragansett Bay Commission's CSO project, including the Bucklin Point WWTF. Phase I is expected to reduce CSO discharges by 40%. These improvements on the major tributaries to Narragansett Bay will ultimately allow parts of the bay that are now closed to shellfishing after rain events to be reopened 50-78% more often. (For more information on closure areas, visit the DEM web site and click on Maps.)

Nonpoint Source Pollution

Following an extensive stakeholder process, DEM finalized federally mandated Phase II storm water regulations that require cities and towns with urban areas to develop and implement runoff control plans. DEM is working with municipalities and watershed groups to implement the regulations. Stormwater management is a key element of watershed action plans and many water quality restoration plans. The Department would like to develop an approach similar to one that has been successful for the other major source of nonpoint pollution: septic systems. Several communities have used DEM grants to develop wastewater management district plans, which make them eligible for low or zero interest loans from the state revolving loan fund to fund upgrades. In 2001, DEM awarded grants to 6 commu-

DEM is helping cities and towns control runoff from stormdrains like the one below at Sabin Point in East Providence.



Warwick Wastewater Treatment Facility Denitrification Project

Warwick WWTF operators took advantage of technical and grant assistance from DEM in meeting more stringent permit limits for nutrient discharges. The Department hired experts to train the operators to remove substantial amounts of the toxic substance ammonia and oxygen-depleting nitrogen from its discharge into the Pawtuxet River.

While permanent upgrades to meet the new permit limits were being designed, the operators undertook the daunting task of installing new equipment and changing process controls to perform a two-stage removal of ammonia and nitrogen compounds - a process called denitrification. Getting the existing plant to denitrify serves two purposes: it helps to design better, less costly upgrades; and the discharge is less harmful to the river *now* - three years ahead of schedule.

Above, Patrick Doyle and John Hannon of the Warwick Sewer Authority install recycling equipment to help the plant remove ammonia and nitrogen from its discharge.

nities totaling \$135,000. DEM also issued a Request for Proposals for water pollution abatement projects with about \$450,000 available.

Wetlands

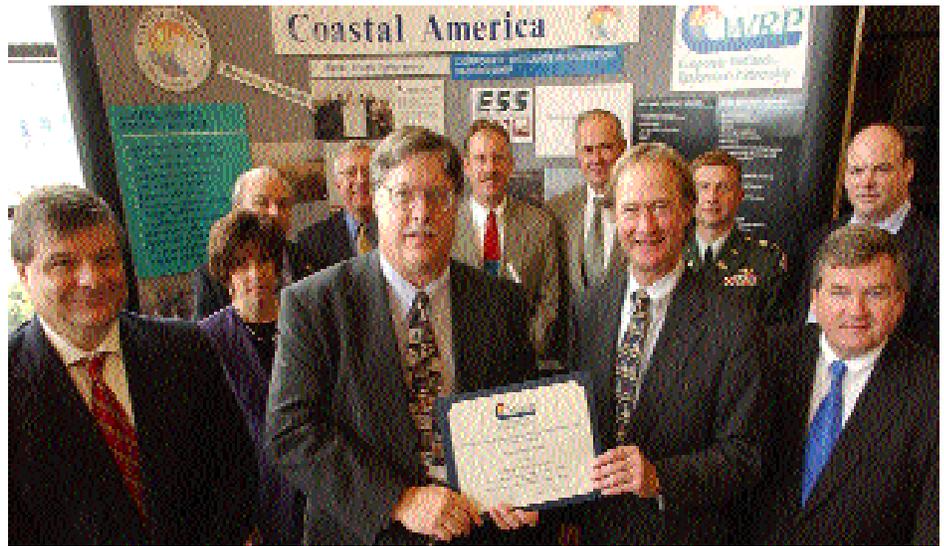
Wetlands protection is critical to reducing nonpoint source pollution. Loss of wetlands typically results in more, unfiltered runoff into our streams. It is not easy to get DEM approval for projects that result in loss or significant alteration of wetlands, since the permitting program avoids significant alterations as much as possible. There is reason to be concerned, however, with lack of compliance with permit conditions as well as failure to obtain permits. In its year-end report, DEM's wetlands program documented a significant amount of wetland alteration, 17.1 acres, resulting from such violations in 2001. By comparison,

DEM's permits issued resulted in a net alteration of only 2.1 acres.

The report grew out of a permitting task force. Implementation of other task force recommendations during 2001 reduced the average time it takes to get an approval for projects that do not alter wetlands significantly from 121 to 77 days. We hope that improvements will encourage more compliance with, and support for our Wetlands Protection Program. The report also underscored the need, however, for more field inspections to make sure applicants abide by their permit conditions and to deter activities that impact wetlands without a permit. We hope that permit streamlining can free up some staff time for such inspections.

Funding Uncertainty

In addition to the grants mentioned above, DEM completed its final round of Rhode Island Aqua Fund grants in 2001 by awarding a total of \$155,600. Over the last 12, years this program provided support for 68 projects totaling \$8.9 million. In addition, since 1994, 43 Non-governmental Water Pollution Control Facilities Fund grants totaling \$1.5 million were given to farmers, marinas, restaurants and manufacturers to solve water pollution problems on their properties. Unless funds previously awarded for projects are not fully used, additional grants cannot be made from the minimal funds remaining. Given the budget situation, the Aqua Fund and the Non-governmental Water Pollution Control Facilities Fund accounts are not likely to be replenished. And it is doubtful that new bond funding will be



The RI Corporate Wetlands Restoration Partnership began with initial corporate commitments totaling \$100,000. Above, Senator Lincoln Chafee honors corporate partners at the kickoff event held at the Citizens Bank building on October 22, 2001. For information on specific restoration activities, see Healthy Ecosystems.

authorized to address the estimated \$25 million gap in funding needed to address nonpoint source pollution problems statewide.

Nonpoint source pollution is so diffuse that it is virtually impossible to hold specific parties responsible, which makes it necessary to provide financial and technical incentives. Without state bond monies as a match, it also becomes very difficult to secure federal funding which multiplies the gravity of this funding gap. Given the significance of nonpoint source pollution and its environmental as well as economic impacts on recreational uses and shellfishing, for example, this presents a major challenge for managers and policy makers.

Water Quality Protection Grant and Loan Awards in 2001

(Aqua, Nonpoint Source, Pawtuxet River Authority, and Pawtuxet River Water Quality Bond Funds, and the State Revolving Loan Fund)

Recipient	Amount	Purpose
GRANTS		
Cranston	\$ 6,000	Storm water Management Plan
	28,000	Reducing nonpoint source pollution in the Narrow River watershed
East Providence	49,603	Ten Mile River Fisheries Restoration Feasibility Study
URI	18,397	Storm water runoff treatment with Vortex structures study
Warren	6,401	Palmer Avenue Marsh Restoration
Providence	14,800	York Pond Restoration
Coventry	25,000	Wastewater management planning
East Greenwich Development Consortium	75,000	Wastewater management planning for Exeter, Hopkinton, and Richmond
Little Compton	25,000	Wastewater management planning
Smithfield	10,000	Wastewater management planning
Warwick	2,990,142	WWTF disinfection improvements
Cranston	1,876,432	Advanced wastewater treatment - construction
Warwick	1,595,603	Advanced wastewater treatment – design and construction and administration building
West Wawick	646,570	WWTF improvements
LOANS		
Cranston	1,122,400	Sewer repair, pump stations, and advanced treatment planning
East Greenwich	2,000,000	Sewers
Narragansett Bay Commission	271,807,395	CSO construction, WWTF upgrade, and sewer cleaning
Newport	2,966,565	WWTF repair and telemetry
New Shoreham	250,000	Septic system repair/replacement
North Kingstown	300,000	Septic system repair/replacement
Warwick	1,227,856	Sewer design and construction
Westerly	1,066,210	WWTF upgrade
Woonsocket	66,648	Sewers

Livable Communities

The Department's livability agenda is a balancing act between reacting/responding and being proactive through planning; and between dealing with problems on a smaller, case-by-case basis and working at a much larger, community or watershed scale. The focus is on public health and safety, as well as sustainability.

PUBLIC HEALTH AND SAFETY

MTBE

After methyl tertiary butyl ether (MTBE) contaminated the Pascoag drinking water wells in Burrillville, residents suffered for several months without water for drinking, cooking, brushing teeth, and bathing and small children. DEM led efforts that identified the Main Street Mobil gas station in Burrillville as the source of the contamination. Numerous violations of Underground Storage Tank regulations led to formal enforcement action, an initial penalty of over \$57,000, and court action.

Since the responsible party declared bankruptcy, DEM took over investigation and cleanup and secured reallocation of up to \$400,000 in EPA funds. We also provided funding to connect the Pascoag water system with the nearby Harrisville water system; provided bottled water to 1200 families; installed a temporary treatment system on the Pascoag wells; and expedited approval of a new well for the Harrisville Fire District to serve both villages. We continue to take part in regional efforts to get federal action to reduce or eliminate use of MTBE, and to work with state and local officials to address the lack of local capacity to handle such a crisis.

Christine Bisson cashes out a customer at Brigido's IGA Marketplace in Pascoag, where shelves emptied of bottled water soon after the crisis began.



DEM's Lt. Kurt Blanchard and Environmental Police Officer Steve Criscione prepare to escort an LNG tanker into the Port of Providence,

Terrorism Scares

The Department's emergency response team worked with state and local health and safety officials on biological weapons issues and participated in anthrax threat screenings. Team members trained in the federal Department of Justice Weapons of Mass Destruction (WMD) Program. We also worked with state and federal offices to set up a center to screen material for radiation, explosives, and volatile organic compounds. We are part of a regional Anthrax Strike Team to respond to incidents that are beyond the capabilities of local responders. Members of the DEM Enforcement Division provided patrols to escort LNG tankers in Narragansett Bay.

West Nile Virus/Eastern Equine Encephalitis

In 2001, mosquitoes from nine communities tested positive or suspected positive for West Nile Virus, and mosquitoes from one community tested positive for Eastern Equine Encephalitis. Two hundred and fifty out of 440 birds tested positive for West Nile Virus. The State revised its response protocol based on Center for Disease Control policy. Larviciding and personal protection, rather than spraying adulticide, became the cornerstones of our response. We provided 1.25 tons of larvicide to municipalities to reduce the number of mosquitoes and minimize the transmittal of disease to humans, and continued an aggressive campaign with the Department of Health to promote personal protection against mosquito bites and to eliminate home and yard breeding places.

CLEANUPS

Oil Spill - Cove Metals, Burrillville

The largest oil spill tackled by DEM in 2001 occurred at Cove Metals in Burrillville. After a release from two abandoned 30,000 gallon underground storage tanks, response teams placed oil booms and pumped over 110,000 gallons of oil and oily water from the tanks and a trench that was dug to prevent further release into the Branch River. Although the owner paid cleanup costs including removal of 518 tons of oil-contaminated soil and 9 drums of hazardous waste, the Notice of Violation and \$48,130 penalty are being appealed. Department investigators have not found oil in the groundwater.

DEM and others respond to a major oil spill at an abandoned mill in Burrillville.



and the Leeson property on Strawberryfield Road. The Providence projects are at the Home Depot site on Silver Spring Street and at Gorham Manufacturing on Adelaide Street which may become the new home of the Greater Providence YMCA. DEM also oversaw investigations, cleanups and restoration of federal sites, including the 189-acre Calf Pasture Point site at the Naval Construction Battalion Center, which was transferred to the Town of North Kingstown for recreational use.



Waste clam shells at the Moniz Hog Farm in Tiverton.

In support of the project to re-align Interstate Route 195 through Downtown Providence, DEM signed an agreement to expedite approval of DOT investigation and cleanup plans for more than 30 sites.

Solid Waste Cleanups

Three tire pile cleanups were completed, two long running solid waste cleanups were substantially completed, and waste removal began at a third site. The Department also met an aggressive schedule set by the legislature to amend regulations to address odor and solid waste issues in Cranston and Johnston. And we signed up six landfill owners to participate in the Landfill Closure

Program, which will speed investigation and cleanup of inactive or abandoned landfills without the need for going through the Superfund Program.

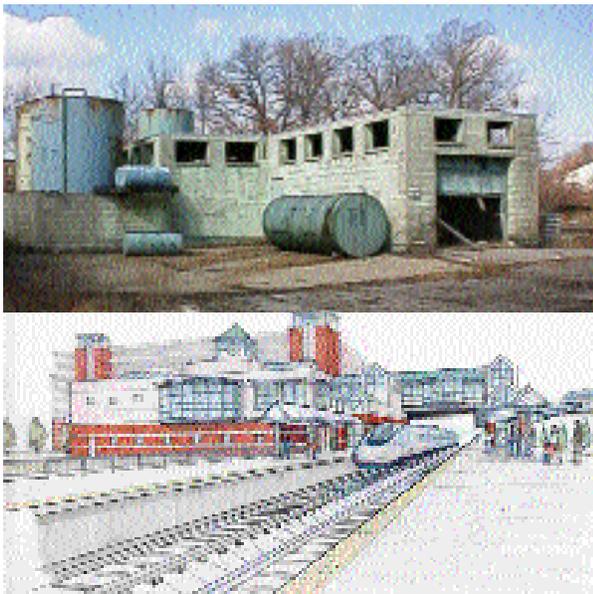
Major cleanups included:

Moniz Hog Farm, Tiverton - Cleanup and restoration was substantially completed in December after 6 years of effort to remove approximately 35,000 cubic yards of waste clam shells and associated organic waste and to resolve wetland and water pollution violations. Work included restoring about 13,000 square feet of wetlands and eliminating water pollution leaching from the decomposing waste.

Brownfields

Cleanup of 130 acres of Brownfield sites last year brought the total acreage restored since 1996 to 723. Over \$68 million in property has been returned to the tax rolls, leading to more than \$2.1 million in new assessed local taxes as a result of a program administered jointly by DEM and the Economic Development Corporation. The number of new jobs created increased to approximately 975 which has generated an estimated \$3.3 million in annual state income taxes.

Four major cleanup/remediation projects in Warwick and Providence that the Department began last year include the proposed train station at T.F. Green Airport,



Brownfields. Brownfields are abandoned buildings or sites where redevelopment is hampered by environmental contamination, burdening local economies and presenting environmental and public health threats. Brownfields are being cleaned up and turned into new businesses, parks, and other uses. At left, a brownfields site in Warwick will become a new train station at T.F. Green Airport.

For more information, call 222-2797 or visit the new Brownfield web page at www.ribrownfields.org. The website is a joint effort of DEM, Statewide Planning and the Economic Development Corporation.



DEM's Steve Morin (now retired) surveys a tire dump in Johnston.

Robert Recchia – Mill Street, Johnston - Removal of over 58,000 cubic yards of construction and demolition debris from this property put an end to the odors coming from decomposing waste, and capped a nearly two-year effort by the Department, the Office of the Attorney General and the Rhode Island Resource Recovery Corporation (RIRRC).

Global Waste Recycling, Coventry - After a two-year legal process, waste removal began, affirming Department requirements to stop disposal and remove all waste by December 31, 2002. The facility operator and the property owner are appealing enforcement actions and penalties of over \$600,000.

Tire Piles - DEM supervised final cleanup and removal of three major tire piles, including two in Johnston, a Railroad Avenue site with about 175,000 tires, and another at 78 Belfield Drive with about 125,000 tires. RIRRC cleaned up the Belfield Drive property as an offset to penalties for noncompliance at its Central Landfill. A court order obtained by DEM and the Office of the Attorney General requires the owner to remove about 58,000 tires from the third site on Old Hope Kent Road near the North Branch of the Pawtuxet River as it leaves the Scituate Reservoir.

Dam Safety

A \$101,000 grant from the Federal Emergency Management Agency (FEMA) will help carry out the recommendations of the Governor's Dam Safety and Maintenance Task Force January 2001 report and safeguard lives and property. DEM staff inspected 16 high hazard

dams and 41 significant hazard dams and found that the high hazard dams were generally better maintained than the significant hazard dams. We completed inspections and continued restoration of state-owned dams, substantially completing the rebuilding of the Bowdish Reservoir Dam in Glocester and starting design for repairs to the Stillwater Reservoir Dam in Smithfield. The *2001 Annual Report to the Governor on the Activities of the Dam Safety Program* can be found at www.state.ri.us/dem/pubs/index.htm.

SUSTAINABLE WATERSHEDS

Watersheds Partnerships

While most states limit the focus of watershed efforts to water quality, DEM's much broader approach assists localities with regional planning for more sustainable growth and preservation or restoration of natural resources. Watershed action plans were completed for the Woonasquatucket, Narrow, Pawcatuck and Saugatucket River Watersheds and the Salt Ponds region. A first draft of an action plan for the Blackstone was also completed. The Watershed Coordinating Council uses the action plans to focus government and nonprofit resources on priority watershed activities such as restoring water quality, remediating contaminated sites, and preserving significant landscapes. This is the first time that local organizations had a direct role in determining the most important actions in their watersheds.

Other DEM efforts to assist watershed organizations and other non-profits include two guidebooks: the Watershed Resource Guide and a web-based grant guide; promotion of an agreement among watershed council members to include watershed organizations in applicable grants and projects; help in obtaining General Assembly funding; coordination of watershed training through the State Park

DAM CLASSIFICATIONS

- High Hazard – Failure of the dam would most probably result in the loss of more than a few lives and extensive property damage.
- Significant Hazard – Failure of the dam could possibly result in the loss of life and appreciable property damage.
- Low Hazard – Failure of the dam would result in no apparent loss of life and only minimal or no property damage.

Below, the Blackstone River pours over Thundermist Dam in Woonsocket. On June 18, the river crested three inches below its flood stage of nine feet after torrential rains.



Naturalist Program; and a web site to notify coordinators of funding opportunities and activities affecting the watersheds. The South County Planning Assistance Project received a citation from the National Governors' Association. The project produced five guides, including a design manual that contrasts the impact of existing development regulation with more creative development scenarios in eight different settings using actual South County sites; model land use ordinances; strategies to help farm and forest owners raise revenue to maintain working landscapes; and a rapid site assessment guide for planners, developers and local board members. All are available on the Sustainable Watersheds Office web site at www.rivatersheds.org.

Greenspace Projects funded by US Forest Service were begun in the South County and Woonasquattucket watersheds to help localities map important natural, cultural, and recreational resources and facilitate linkages throughout communities and the watershed. We helped coordinate the South County Economic Development Project and expanded watershed partnership activities into the Blackstone watershed in July.

Community Farming - The Department helped the Rhode Island Food Bank and volunteers begin the Rhode Island Community Farm in Jamestown. The Farm reaped more than 60,000 pounds of beans, broccoli, tomatoes, potatoes, cucumbers, eggplant, squash and cabbage for the Food Bank. The Department also makes land available at Curran State Park in Cranston to Southeast Asian immigrants for community farming.



Governor's Growth Planning Council

DEM staff worked with the Growth Planning Council, created by Governor Almond in February 2000, to evaluate the contribution of existing state programs to sprawl, explore the expansion of local GIS capacity, and establish a subcommittee to analyze obstacles and identify ways to provide infrastructure for compact development in rural areas. We also convened a subcommittee to explore how to prioritize public investment and regulatory streamlining to support sustainable growth in municipally-identified growth centers.

Forest Facts

- RI is 59% forested
- RI has 393,000 acres of forest
- There are over 32,000 forest land owners in RI
- 177 businesses with 4,721 jobs depend on RI forests
- Over 284,000 people annually participate in hunting, fishing or other wildlife-dependent recreation and spend over \$294 million



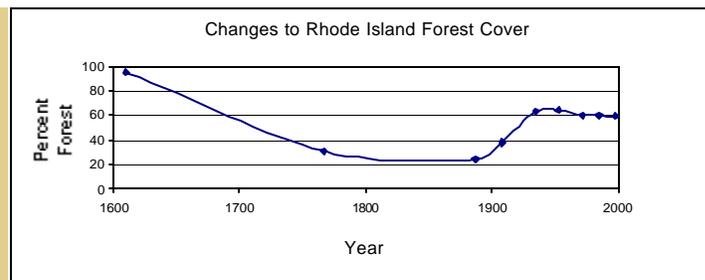
Blackstone River Watershed Greenway Challenge - On September 29, 2001, two DEM teams competed in the 1st Annual Challenge - a multiple run, canoe and bicycle event. The Challenge helps raise awareness of the natural, cultural and recreational opportunities in the Blackstone River watershed. Contributions from the Department and individual DEM staff totaled \$1,500.

Woodscaping

As suburbanization encroaches on forestlands, many wooded areas of 10 acres or less are created around housing developments. These small woodland parcels in suburban and rural areas are increasingly important to the state forest cover. DEM is partnering with the Southern New England Forest Consortium and URI to develop a program to assist landowners in managing small acreages.

Community Forestry

Street and park trees reduce runoff, absorb air pollutants, release oxygen, lower temperatures, provide wildlife habitat, abate noise and enhance property values and community life. Since the average life of a tree in a downtown area is only 12 years, maintaining the urban forest requires continual effort. In addition to helping the town of Bristol replant disease-resistant elms along the route of the oldest Fourth of July parade in the country, DEM awarded grants for 650 street trees to 12 other communities, 2 non-profits and the Narragansett Indian Tribe. With the Rhode Island Tree Council, DEM also assisted 16 communities with forest management planning and inventory and tree planting and care.



Healthy Ecosystems

After years of effort to establish cooperative ecosystem programs, partners are beginning to see results. Research findings are being applied in more situations and restorations are going forward despite funding gaps. The Bay Window Project uncovered some unexpected problems in the bay. A State of The Bay Report on economy and environment was started, restorations got underway from Portsmouth to South County to the Blackstone Valley and Woonasquatucket, and new mapping tools and websites made sharing information easier. While investigation into the decline of some species continued, other species such as the osprey and the fisher have reached sustainable numbers. However, despite such progress, lack of resources continues to slow efforts to analyze masses of data and to restore critical habitats.

Ecosystem Management and the Watershed Approach

In recent years environmental protection and natural resources programs have shifted focus from specific areas like air or water quality, agriculture, fisheries, or recreation to give stronger emphasis to connections among these areas with cross-media approaches as exemplified by the watershed approach. Another objective is to develop better long-term solutions for environmental problems by acknowledging their regional, rather than local or site-specific nature. The watershed approach usually focuses on environmental issues as they affect humans, i.e. public health, community character or quality of life.

Making healthy ecosystems a priority means focusing on what it takes for an entire ecosystem to function and provide a healthy habi-



The Insomniacs: Dissolved Oxygen (DO) Strikeforce

After presenting data on fish and invertebrate kills at a conference on nutrients in September 1998 that pointed to low DO as the cause, Narragansett Bay Estuary Program (NBEP) staff member Dr. Christopher Deacutis emailed conference participants to ask for volunteers to do DO sampling. Twenty-five volunteers from the Massachusetts Coastal Zone Management Agency, EPA, Narragansett Bay Estuarine Project, NBC, YS1/MA, Save the Bay, DEM, and universities (Brown, Roger Williams, URI, and Harvard University School of Public Health) responded. They conducted all-night sampling in the upper half of Narragansett Bay at 75 stations, twice in 1999, twice in 2000, and 3 times in 2001. The team contributed boats, fuel and time and obtained a NOAA grant to purchase equipment. The researchers found that large portions of the Upper Bay were subject to sporadic periods when DO levels plunged. Volunteer graduate students under Dr. Warren Prell and Dr. Dave Murray of Brown University are helping to analyze the 2001 data. At left, Dr. Deacutis (left) and Brown University's Dr. David Murray (right) check equipment before setting out on a survey.

tat for all resident species. Awareness is growing that disruption or degradation of ecosystems has serious economic as well as environmental consequences. Narragansett Bay, for example, shows what chemical, biological or thermal pollution can do

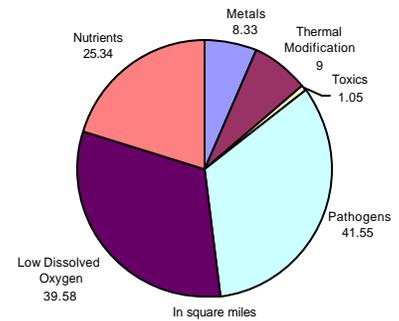
to our fisheries, and what cleanup and habitat restoration can do for our fisheries, as well as for recreation and tourism. The Bay is also a good example of our limited knowledge of the status of our ecosystems and the factors that affect their health. Restoring our ecological health requires much more research and analysis, interdisciplinary thinking, coordination among academics, agencies, politicians and citizens, strategic planning and adaptive management that can adjust to changes in conditions or knowledge.

Research - The Bay Window Project

The National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS) and DEM have managed the Bay Window Project since 1998, when a federal grant was awarded through the late Senator John H. Chafee's sponsorship. For its success, the Bay Window program relies on two key ingredients:

state-of-the-art technology and scientific collaboration. Researchers use the latest tools to coordinate fish and shellfish population assessments; surface to bottom water conditions measurements taken day and night year-round; physical, chemical and biological measurements; and analysis of sediments at locations around the bay. In addition to confirming the finding of periodic, surprisingly low Dissolved Oxygen (DO) levels in certain areas of the Upper Bay, researchers found that winter

Sources of Impairments to RI Coastal Waters



flounder and other bottom-dwelling fish in the bay have not recovered from their decades long collapse. Only 18,000 winter flounder were caught in the bay last year, in sharp contrast to the situation on Rhode Island's south shore where winter flounder flourish. The team continues to seek funds to investigate age and growth rates for all species, as well as by catch, in accordance with the Sustainable Fisheries Act, and to find the cause of the decline in winter flounder and other valuable bottom-dwelling species.

Coordination and Planning for Narragansett Bay

Narragansett Bay's salt marshes, sea grass beds and river systems help support large segments of the state's economy: \$75 million in commercial fishery landings, a \$150 million recreational fishery, and a tourism and outdoor recreation industry that is valued at \$2 billion on Narragansett Bay alone. The Partnership for Narragansett Bay and the Coastal Institute followed up on Bay Summit 2000 priorities to integrate data management, to address nutrient loading, to restore habitats and to provide better scientific and economic information.

2001 projects included: drafting the State of the Bay Report on environment and economy for publication in the fall of 2002, and holding two workshops – one to recommend monitoring priorities and another to develop a framework for environmental indicators for Narragansett Bay and the coastal ponds. DEM published the Atlas of Narragansett Bay Coastal Habitats with 13 color maps of Narragansett Bay and shoreline areas in Rhode Island and Massachusetts showing coastal habitats, seal haul-out sites, maritime bird nesting sites, and information on other denizens of the Bay watershed. We also developed lists of priority restoration sites and technical and funding assistance sources under a \$270,000 NOAA grant.

Information Exchange -Mapping, Web Sites

Mapping what we know about habitats is essential to protecting and managing them. In addition to the Coastal Habitat Atlas, the Department developed the following mapping and web site tools in 2001.

Atlas of Rhode Island Wildlife Management Areas

RI has over 46,000 acres of wildlife management areas that are open for fishing, hunting, nature study, and hiking. An atlas describing the location, access points, habitat and wildlife for each of the twenty management areas, last revised in 1996, is available from DEM's Fish and Wildlife Division. Maps updated in 2001 are on line at www.state.ri.us/dem/maps and are available as single copies. The atlas will be re-published at the end of 2002 when the text has been updated.

Survey of Mapping Needs. In response to a URI survey of 500 professionals who use wetland maps regularly, 140 said that improvements such as greater positional accuracy, updated information and large-scale formats are needed. Map experts recommended creating new maps rather than improving the existing RIGIS dataset, should funding become available. The 2001 study was commissioned by DEM and funded by EPA.

Vernal Pool Web Site. Preserving vernal pools that provide critical breeding sites for some frogs and salamanders is essential to protecting amphibian species that are in serious decline worldwide. EPA sponsored a URI/DEM project to



What are vernal pools?

'Vernal' means 'spring' – vernal pools are seasonally-flooded depressions found on soils with an impermeable layer such as a hardpan, claypan, or volcanic basalt. The impermeable layer allows the pools to retain water much longer than the surrounding uplands, but the pools are shallow enough to dry up for part of each year.

develop a Rhode Island vernal pool website, with links to community vernal pool activities and an on-line vernal pool manual. The web address is <http://www.uri.edu/cels/nrs/paton/>.

Wetlands Restoration Website - Visitors can nominate wetland sites for restoration; learn about different Rhode Island freshwater wetland types; track trends in regulatory reforms, permit and enforcement actions; and wetland loss and gain on our new website. The site also describes EPA-sponsored wetland protection projects by the Towns of Coventry, Little Compton, Tiverton and North Kingstown. For more information see <http://www.state.ri.us/dem/programs/benviron/water/wetlands/index.htm>.

Interactive Mapping - For information on interactive mapping see Open & Effective Government.

Restoration

Some habitat restoration projects moved forward while constituents and staff sought to raise much needed funding for others. We believe 2001 was the fifth year that a bill to provide funding for habitat restoration was introduced in the General Assembly but not enacted. This means there is still no reliable, long-term funding to facilitate restoration projects which usually take years to accomplish involving many partners in planning, fundraising, permitting and construction. Notwithstanding this setback, DEM, CRMC, Save the Bay and other partners, have found ways to continue at least some restoration projects ranging from removing invasive species to controlling erosion to mosquito abatement. Major projects underway include:

Town Pond (Boyd's Marsh), Portsmouth – The restoration will turn the marsh from a mosquito breeding ground to a home and breeding area for dozens of species, from shrimp and killifish to blue crab and striped bass, winter flounder and other valuable marine species.

Trustom Pond - The US Fish and Wildlife Service began the project using the DEM Marsh Walker to cut acres of phragmites reeds to facilitate decomposition and allow the sun to reach the ground. US



Gidget Loomis celebrated the opening of the tidal gate that replaced a culvert that collapsed six years ago at Duck Cove in North Kingston with the Duck Cove Bluff Association, DEM, marsh neighbors, and other groups. Although several agencies contributed technical and financial support, the success of the project is due to the continuing efforts of Ms. Loomis, who kept the project alive through the maze of steps involved in the planning, fundraising, permitting, and construction phases.

F&W will replace the invasive, low-habitat value phragmites with native vegetation.

Lonsdale Marsh, Cumberland – The Army Corps of Engineers and DEM are developing final designs and securing funding to restore seven acres of wetland and 13.4 acres of upland riparian habitat on the site of an abandoned drive-in movie theater.

Woonasquatucket Watershed - URI researchers began knocking on doors in December as part of a wetland restoration planning project with DEM and the Woonasquatucket River Watershed Council. After finding 146 potential restoration sites, as well as many disturbed upland buffer sites in the watershed, URI began contacting landowners to discuss possibilities for restoring their property with native plants. For more information see <http://www.state.ri.us/dem/programs/benviron/water/wetlands/index.htm>.

The Woonasquatucket River Watershed Council also chose the Riverside Mills in Providence for the Woonasquatucket River



Salt marsh restoration frequently involves mosquito abatement, as in the Duck Cove restoration where DEM staff spent a week clearing out old mosquito ditches in the upper marsh. The old ditches let salt water into the far reaches of the marsh to discourage phragmites and allow fish into these passages where they eat mosquitoes. Above, DEM staff member Al Gettman and the Department's Mosquito Abatement Marsh Walker.

Riparian Buffer Restoration Project from among 36 sites in a program funded by the US Forest Service to demonstrate restoration of a brownfield site for public use. Contaminated soil, underground vaults and tanks will be removed and replaced with clean fill and topsoil. Construction begins next summer on the bike path that will be part of the Providence River Greenway. The site will be planted in the fall with trees and wetland vegetation. Among those providing funding and materials are: USDA Forest Service, EPA, National Fish and Wildlife Foundation, and the Army Corps of Engineers.

Feasibility Studies - With CRMC the lead agency, the Department participated in two restoration feasibility studies. The first at Allin's Cove in Barrington will restore an 11-acre, degraded salt marsh. The second at the South Shore of Westerly and Charlestown will restore eelgrass in three ponds and provide fish passage at two streams.

Fish and Wildlife Projects

Ten Mile River Fish Restoration - The Army Corps of Engineers completed the feasibility study for the Ten Mile River fish ladder, funded by the federal Fish and Wildlife Service, Save the Bay and an Aqua Fund grant to the City of East Providence. The partners are seeking \$490,000 as match for federal funds to build a \$1.4 million fish ladder that will allow herring, shad, white perch and the American eel to return to the river.

Blackstone River – DEM commissioned a fisheries study and convened a stakeholder committee that developed a plan for fish passage at four dams on the lower Blackstone River. The plan was released for public comment in November.

North Cape Oil Spill Restoration Fund Projects - Projects to address resource damage from the North Cape oil spill included:

- DEM acquired a conservation easement to 65 acres of the Arnold Farm next to Ninigret Pond in Charlestown to protect eelgrass and help to re-establish invertebrates, fish, and shellfish. The Nature Conservancy and DEM Open Space funds provided additional funding.

- The fund contributed \$500,000 to help acquire a 762,000-acre conservation easement that will permanently protect critical loon nesting areas in northern Maine on property with over 100 ponds and lakes. The 1996 oil spill killed over 400 loons that winter off Rhode Island.

- We began a three year shellfish restoration project with NOAA that will seed several million quahogs, scallops, eastern oysters, and soft shell clams in the coastal ponds, as well as fund a transplant program to restore shellfish resources destroyed by the oil spill.

- The responsible party stocked 300,000 lobsters in 2000, and 36,000 in 2001 in accordance with the North Cape Oil Spill settlement requirement. The settlement mandates restocking 1.248 million female v-notched legal-sized lobsters into the waters off Block Island Sound to compensate for the nearly 9 million lobsters that were killed by the spill.



Salt Ponds Restoration

Working with the Department of Health, shellfishermen, and volunteers from the Salt Ponds Coalition (SPC), DEM transplanted between 110 and 120 bushels of adult quahogs into each of three spawner sanctuaries in the Quonochontaug and Ninigret Ponds in Charlestown and Winnapaug Pond in Westerly. Shellfishermen were paid ten cents per pound to dig the clams from mildly polluted areas of Narragansett Bay and take them to a staging area where they were loaded onto DEM trucks and delivered to the ponds. SPC volunteers unloaded the trucks and planted the quahogs using their own boats. The quahogs will be protected in the sanctuaries where they will rid themselves of pollutants and release their spawn to help restore the quahog fishery in the salt ponds. North Cape Oil Spill Restoration Funds financed the project.

gardening and the importance of native plants. The children planted 20 trumpet vine plants and made stepping stones. The Butterfly Garden also helps conserve biodiversity and showcases the use of organic fertilizers.

Invasive Plants - Among many DEM projects to manage habitat for species is one to control invasive plants and allow more productive native species to recolonize at five of our management areas. Autumn olive and multiflora rose have invaded meadows and fields, while phragmites australis is taking over marsh wetland habitats in both salt and freshwater environments on parts of wildlife management areas at Simmons Mill Pond in Little Compton, Sapowet in Tiverton, Great Swamp in South Kingstown, North Prudence, and Haffenreffer Refuge in Little Compton. We began to remove invasive species to allow native species to recover.

Wildlife Habitat

In recent years DEM has restored habitats and reintroduced species such as wild turkeys. Other successes in preserving and restoring wildlife through habitat protection include:

Osprey - DEM presented an award to Narragansett Electric in November 2001 for providing nesting sites for ospreys, an indicator species that tell us about the quality of our environment. The company has worked with us since 1982 to build osprey nesting platforms, place poles, and retrofit power lines to protect nesting birds from electric shocks. The number of osprey nests in Rhode Island has grown from two at its lowest point in 1967 to 80 at present. The number of young has grown from the single digits through most of the 1960s to 116 in 2001.

Ruffed Grouse - Three years ago DEM joined with six other states in a five-year Appalachian Cooperative Ruffed Grouse Research Project to determine the cause of a decline in the species. The Champlin Foundation funded the Rhode Island portion. Ruffed Grouse are a native species that was a very abundant major prey item for many animals and raptors. About 1,500 birds have been captured in thousands of locations and fitted with radio transmitters for tracking. DEM staff trapped 30 birds last year to attach tracking devices. A URI graduate student is reviewing the data for clues to habitat quality. The team will analyze the data to determine what needs to be done to improve habitat for ruffed grouse and for other birds that depend on similar habitat.

Butterfly Garden - In 2001 *Rhode Island Monthly Magazine* named the Narragansett Bay Estuarine Research Reserve (NBERR) on Prudence Island the "Best Day Trip for Bug Lovers" for its butterfly garden. It was the best year for butterflies, spiders and other insects since the garden opened in 1997. Greenworks, the community action component of Project Learning Tree, awarded a grant to buy and plant native species such as joe-pye weed, pink tickseed, and lupine and to teach Island elementary students about pesticide-free



Two ospreys sit on a nest in a marsh in Jamestown as the Pell Bridge looms in the background.

Resource-Based Industries

During 2001, the Department built and restored fisheries facilities in Newport and Galilee, developed policies and technologies for marine fisheries management, promoted farm and forest viability and managed large game populations to promote resource-based industries and protect the state's natural resources base.

FISHERIES

Fish Trends

Recent bottom trawl survey data suggest that the sharp decline in bottom-dwelling fish and a steep increase in off-bottom species and lobster may be reversing. Shellfish dredge surveys show shellfish and crab abundance has risen while quahogs have declined. Overfishing and habitat alteration have done the most harm to important commercial and recreational species such as winter flounder that spend their entire lifecycle in Narragansett Bay. In 2001, the Department updated management plans for winter flounder, tautog, weakfish, striped bass, horseshoe crab, eel and 10 other species. In addition to regulating fishing levels, DEM is examining whether habitat can be controlled and improved to increase winter flounder and other resident fish populations.

Commercial Licensing

At the Governor's request, the Coastal Institute at URI hosted a series of public meetings to discuss fisheries issues and changes to the commercial licensing system before the legislative moratorium on new licenses expires in 2002. A large number of fishermen, dealers, academics, agency staff and legislators worked for hundreds of hours to come up with management principles and a licensing structure. Many of their recommendations are reflected in legislation that has been introduced or is currently being debated. Much

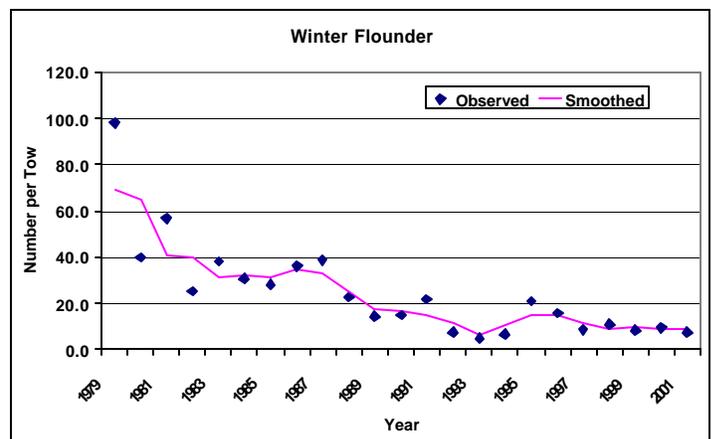
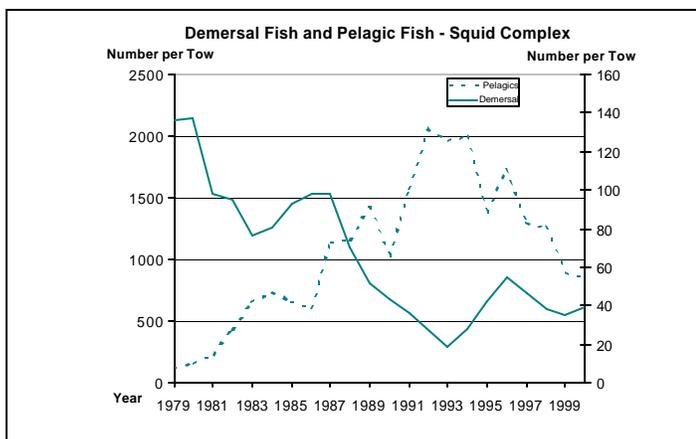


Historic Restoration at Fort Wetherill State Park – The 2001 completion of the \$4 million restoration of abandoned military buildings at Fort Wetherill in Jamestown will enhance our fisheries research capabilities and provide additional assistance to the commercial and recreational marine fishing industry.

progress was also made with changes in regulation of aquaculture; and discussions continue about recreational fishing licenses.

Horseshoe Crabs

Due to heightened concerns about the status of horseshoe crabs, DEM lowered the quotas for the bait industry by another 20 percent after lowering the quota for the biomedical industry and for commercial takings by 20 percent in 2000. Horseshoe crabs taken from Rhode Island waters to a lab on Cape Cod to have blood drawn for the biomedical industry are supposed to be returned to their native waters. We have established a breeding refuge for horseshoe crabs on Prudence Island and are working with the biomedical



Fish that have not fared well are mostly residents, including the Bay's "signature species" such as winter flounder and tautog. Most disturbing, these stocks have failed to recover in spite of more than a decade of severe catch restrictions. At left, the downward plunge in numbers of bottom-dwelling fish was matched by an equal upsurge in off-bottom species. At right, the numbers tell the story of the collapse of Narragansett Bay's winter flounder fishery. There was a modest upturn in the mid-1990's, but it has not been maintained.

industry to track how many pounds of crabs they receive from Rhode Island fishermen and how many pounds they return alive to the waters from which they are taken. The next step will be an interstate enforcement effort to ensure that Rhode Island-caught crabs are returned to the state's waters.

Port Facilities

Port of Galilee - The 2001 improvements to piers G and H included rebuilding a 300 foot portion of the steel bulkhead, installing electrical service to seven commercial piers and drafting specifications to rebuild 530 feet of bulkhead. DEM rebuilt six piers in the last four years. We are also working with the Galilee Port Advisory Committee (GPAC), the Town of Narragansett and stakeholders to develop a comprehensive plan for port development. The DEM Galilee Lease Committee will determine leasing arrangements for the 100 acres of DEM property at the port according to the plan.



Barden Orchards in Gloucester.

Newport Pier 9 - The rebuilding of the south-facing bulkhead, which spans over 600 feet, was completed in October. Other 2001 projects include rebuilding the west and north bulkheads with a total replacement of 1,200 feet of bulkhead for completion in June 2002. The \$2.9 million project will rebuild the fishing wharf; improve water and electrical service as well as organization of the commercial operation; resurface the parking area; and provide stormwater runoff treatment.

Working Landscapes – Farms and Forestlands

Preservation

During 2001 DEM and the Agricultural Land Preservation Commission purchased development rights to three farms totaling 337 acres, bringing total protected working farmland to 4,057 acres. We developed a list of over 40 farms for potential purchase of development rights in the next five years with 2000 bond funds. With the Champlin Foundation and the South Kingstown Land Trust we permanently protected 44 acres in Scituate and 166 acres in South Kingstown using \$563,000 in grants from the US Forest Service Forest Legacy Program. The Forest Legacy Program has funded conservation easements on 656 acres at a cost of \$1.5 million since its inception in 1994.



Farmers' Markets - In summer 2001, a farmers' market at Fishermen's Memorial State Park in Narragansett opened, the third market to open in a state park in the past three years. The markets each serve about 350 people per day, providing many Rhode Islanders with access to fresh produce and baked goods.

Working closely with a legislative commission to promote farm and forest conservation through tax abatements under the Farm, Forest and Open Space Act, we also finalized guidance for uniform valuation of protected farm, open space and forested land.

Best Management Practices (BMPs)

BMP benefits include improved growth of timber and crops, reduced fire hazard, improved wildlife habitat, protecting waterways from pesticide runoff, reducing fertilizer application, and reducing soil erosion. DEM and the USDA, Natural Resource Conservation Service began drafting a BMP manual in 2001 for soil and crops found in Rhode Island. We are also working with the Massachusetts Department of Agriculture to increase the use of BMPs to protect water quality in the Palmer River. DEM foresters worked with 264 landowners on various forestry projects, assisted 70 landowners and 45 businesses in harvesting and processing 4.54 million board feet of timber and 2,234 cords of fuel wood under BMPs. The Department provided the following groups BMP assistance: Rhode Island Forest Conservator Organization, Southern New England Forest Consortium, Rhode Island Chapter of the Society of American Foresters, Rhode Island Registered Wood Operators and Rhode Island Christmas Tree Growers.

Farms

Farm Viability Task Force - With the objective of reversing the decline of farming in Rhode Island, the Department formed a Farm Viability Task Force in 2001. Participants from federal, state and local governments, the University of Rhode Island, the non-profit sector and the agricultural community are meeting quarterly to coordinate efforts, exchange ideas and provide guidance to the Department. DEM is administering a \$150,000 USDA grant to provide business training for farmers.



Bud MacAllister of Burrillville began growing oyster mushrooms after attending a DEM workshop on Forest Based Businesses.

Specialty Crop Grant—The USDA awarded a \$540,000 Specialty Crop Grant to promote Rhode Island agriculture. The DEM Agricultural Advisory Committee will select programs for funding through a competitive process.

Foot and Mouth Disease (FMD)

FMD is a highly contagious disease of cattle, sheep, hogs, and other animals with *cloven* (divided) hoofs. In 2001, a rare outbreak in Europe led to the slaughter of hundreds of thousands of cattle, sheep, and pigs and bans on imports of meat from Europe in the United States and other countries. An outbreak in the United States would be devastating to the Rhode Island livestock industry, which is valued at about 8 million dollars a year. All products or by-products of Rhode Island cloven hoof livestock would be restricted from transport and export, virtually shutting down the livestock industry and all related commerce, including tourism.

We surveyed about 13,500 animals for FMD in 2001. The Department, the USDA and other state agencies are conducting industry notification and education programs and developing emergency response protocols for FMD.

Forests

Since small parcel size and the long wait between timber harvests makes management for traditional wood-based forest products difficult in Rhode Island, DEM works with many groups to assist landowners and wood producers in both traditional and innovative methods. During 2001 we worked with the Southern New England Forest Consortium, Inc. (SNEFCI) to build an internet directory of nearly 2,000 businesses with 180 Rhode Island listings to help wood using industries contact local wood producers (www.snefci.org).

Rhode Island forest landowners took advantage of technical assistance on alternative forest uses from our Division of Forestry and the Rural Lands Coalition to replace or augment the usual forest products and to foster natural resource based development that complements rural character. Recent successes include Abbie Barber, who grows mushrooms in Charlestown, and Milt Schumacher who grows ginseng on part of 87 acres in Scituate. In Burrillville, John Wright produces maple syrup on 153 acres and Bud MacAllister grows shiitake or oyster mushrooms and specialty wood products on his 39 acres.

Recreation-Based Industries

Recreation-based industries contribute millions of dollars to the State's economy. See Fishing, Hunting and Boating sections in Open Space and Recreational Opportunities (next chapter) for details.



Promoting Tourism - DEM facilities and services support one of the leading industries in Rhode Island - tourism. Over half of the visitors to the Department's seven South County beach facilities are from out of state, generating revenue for accommodation-related businesses, restaurants and for the state through parking fees.

Open Space Preservation & Recreational Opportunities

In 2001, open space protection efforts continued to exceed expectations with more acres preserved through greater leveraging of state funds. Bikeways and trails were expanded, as were handicapped access facilities. Building on asset management plans, we prepared legislation to set up a parks and recreation trust fund. We saw a marked increase in civility at the parks as a result of a stronger enforcement presence.

Open Space Preservation

Consistent with Governor Almond's directive, we continued stepped-up efforts to protect remaining open space as a critical element of Rhode Island's high quality of life. For the third year, the Department, federal, local and non-profit entities exceeded the target for acres protected. We achieved the highest one year total with 2,865 acres preserved largely as a result of leveraging funds from other sources. The \$34 million Open Space 2000 Bond Issue, when leveraged with other dollars, will provide \$80 million to buy an estimated 10,000 of the targeted 29,000 acres by 2010.

Promoting stewardship by landowners, and partnering with 40 local land trusts and other nonprofit organizations on acquisition, development and management of protected areas and recreational facilities, is paying great dividends. Local land trusts play an important part in land preservation by identifying opportunities, making contacts, and helping gain the trust of local landowners. Other groups like the Fort Adams Foundation and the Beavertail Advisory Committee play key roles in managing state facilities.

Two acquisitions that stand out are a 160 acre farm in the Arcadia Management Area and the Morash/Toste Farm. The 160 acres of prime forested uplands in the Arcadia Management Area, on Woody Hill Road in Hopkinton and Exeter, provides excellent wildlife habitat which we will maintain in farm fields, providing access for hunting, hiking, and nature observation.



Morash/Toste Farm, Tiverton/Little Compton

The State acquired the first phase of the 418 acre Morash/Toste parcel with 337 acres in Tiverton. When the remaining 81 acres in Little Compton are acquired, we will open a state wildlife management area. In addition to protecting water quality in a portion of the Watson Reservoir watershed that serves Newport's water supply, the property provides wildlife habitat, farm fields, hiking trails, and a 10-acre pond for public fishing.

Another significant land acquisition was Dyer Island, acquired by the Department in September 2001 for inclusion into the Narragansett Bay National Estuarine Research Reserve. The 28-acre island includes a virtually undisturbed salt marsh. The island is a critical nesting site for many species of birds, from gulls to herons to American Oyster catchers, and is ranked second only to Rose Island for a diversity of macro algae. Dyer Island, along with the recently protected Rose Island, has been identified by conservationists, biologists and scientists over many years as a critical site for protection.



Narragansett Electric Company donated the 231 acre Rome Point property in North Kingstown valued at \$8.6 million. It's a favorite spot to watch seals that bask on the rocks off the shore.

At the close of the year, DEM was maintaining the aggressive pace of open space preservation with purchase and sale contracts in place for twelve projects totaling 1,067 acres, preliminary agreements for four projects totaling 585 acres, and negotiations for seven projects totaling 235 acres. In December, we also awarded \$6.5 million to 29 communities for local parks and recreation development that will generate over \$19 million in new and improved recreation facilities.



The Blackstone River Bike Path.

Bikeways, Greenways and Trails

In 2001 DEM and DOT built another 3.5 miles of the Blackstone River Bike Path. The 10-mile stretch offers visitors a unique view into Rhode Island's industrial history. When completed, the 17.1 mile bikeway will run from Pawtucket to Woonsocket, and eventually to Worcester, Massachusetts. The agencies continue efforts to reopen the rest areas on both north and southbound sides of Route 295 with connections to the bikeway. DEM is working on the project design and securing a food vendor to operate the northbound rest area.

We also began designing a 10-mile bikeway to connect Providence and Cranston to the Connecticut border through Coventry. This bikeway will be part of the East Coast Greenway, a planned 2,500 mile connection linking East Coast cities from Maine to Florida.

Recreation Planning

Statewide Open Space and Recreation Plan (SCORP)

Working with stakeholders and meeting the needs of underserved populations are the watchwords on the SCORP project, which is being developed under a \$90,000 National Park Service grant. Partners include the Statewide Planning Program, municipal and state recreation facility managers, and the Rhode Island chapter of the American Planning Association. We developed maps showing the public recreation facilities in Rhode Island's 39 cities and towns based on inventories completed by recreation managers. We also conducted surveys to determine the condition and needs at the facilities as described by park users and managers. Respondents stated they are very satisfied with the safety, facilities, water information and overall quality of state parks and beaches, and that they are satisfied with restroom conditions. A survey of 1,000 members of the general public that will be conducted in Spring 2002 includes an analysis of the need and availability of facilities and services for such groups as minority, low income, elderly, handicapped and urban populations. The Plan, which is a federal requirement for receiving grants for state and local recreation projects, is scheduled for completion in early 2003.

Asset Management Plans

The Department manages 60,000 acres of land (8.6 percent of the land area of the state) in state parks and beaches, forest and wildlife management areas, trails, and bike paths. There are 46 public access areas and 100 public access gates in the system that allow seasonal entry, including boat ramps, and fishing, hunting, and parking areas. The 2001 plan for areas managed by the Division of Forest Environment identifies 106 high priority repair and replacement projects at an estimated cost of \$3.68 million. The 2000 Asset Management Plan for Parks and Beaches found a high need for 102 repair and replacement projects totaling \$6.3 million. Findings and recommendations in both reports show that funding levels for repair and replacement of assets were insufficient to sustain facilities and there is a need:

- for additional short-term funding to eliminate the backlog of replacements, repairs and renovations, and to restore assets;
- to increase annual funding to repair and replace non-capital items on a pay-as-you-go basis;
- to develop a foundation to receive revenues generated at outdoor recreation areas and accept donations from individuals and foundations for reinvestment in outdoor recreation facilities. (Legislation has been introduced to set up a foundation).



A washout in Arcadia State Park is one example of high priority repairs identified in the Forestry Asset Management Plan.

We also completed major construction projects including repairs to the Bowdish Dam and the Kelly House Museum, and began building the restroom facility at Pulaski Recreation area.

Accessibility Program

In addition to designing an accessible fishing pier for Carbuncle Pond in Coventry, the Department completed the following handicapped accessible facilities:

- boat ramp at Haines Memorial Park on the East Providence-Barrington line;
- fishing and canoe portage facility at Barberville Dam in Hopkinton;
- Phase I of a walkway and fishing pier at Upper Roaring Brook Pond in the Arcadia Management Area.

Fishing and Hunting

In support of the estimated \$137 million per year fishing industry, DEM issued 41,666 commercial and non-commercial boating permits and licenses, 28,000 resident and 2,600 non-resident freshwater fishing licenses, and 4,048 commercial and non-commercial marine fishing licenses.

The Department maintains and operates four fish hatcheries, stocks over 80 locations with trout, and stocks pheasants for hunters in wildlife management areas. Our four weekend hunter check stations recorded 1,921 visits and over 5,645 visitor hours during the 2001 fall hunting season. In addition to continuing the distribution of a seven-language illustrated marine fisheries abstract, we began development of two brochures to be published in the spring of 2002: a Rhode Island Guide to Fishing and a Rhode Island Guide to Hunting.

Hunting, which mostly takes place on state property where the Department maintains wildlife populations, contributes \$21 million a year to the Rhode Island economy. In addition to promoting hunting safety and enforcing hunter safety regulations, we granted 7,800 resident and 1,100 non-resident hunting licenses and began drafting plans to improve the public shooting range at The Great Swamp management area in 2001.

Boating

In 2001, the state took major steps to increase boating safety with the passage of two laws. The first lowers the blood alcohol level for boating while intoxicated from .10 to .08. The legislation, which took effect upon passage, sets limits and penalties similar to the driving while intoxicated standards and requires the same levels of testing.

The second law requires those born after January 1, 1986 who operate a boat with a motor greater than 10 horsepower to complete a boating safety course approved by DEM. The legislation also requires that, regardless of age, all operators of personal watercraft must show proof that they have completed a safe boating course. That legislation took effect on January 1, 2002. DEM worked with CCRI to increase the number of courses available and is working with www.boatus.com to offer an online boating safety course so boaters will have sufficient opportunity to comply with the new law.



Beach attendance increased by 9 percent from nearly 6.4 million in 2000 to nearly 7 million in 2001. Above, beachgoers enjoy a sand sculpting contest at Roger Wheeler Beach on Governor's Bay Day.

Natural Resource Bureau personnel also distributed 2,860 boating safety life jacket pamphlets and began preparing our first map of the more than 150 DEM salt and freshwater boating and shore fishing access sites.

Public Safety

The Department's Division of Law Enforcement serves a key role in enforcing the state's fisheries and wildlife laws, with 34 commissioned officers who patrol state and private lands, as well as inland and coastal waters. In 2001, we fielded more than 16,230 calls and complaints and made more than 327 arrests related to recreation, boating safety and fish and wildlife laws. We also installed data terminals in environmental police vehicles for quicker response and greater accuracy.

Department efforts in 2001 resulted in a marked reduction in unruly behavior and complaints at state parks and beaches. The Department increased enforcement of Park Rules and Regulations by training parks supervisors and rangers in basic enforcement procedures and increasing environmental police patrols during peak times. The effort required a great deal of overtime and presents a challenge to sustain given the budget situation.



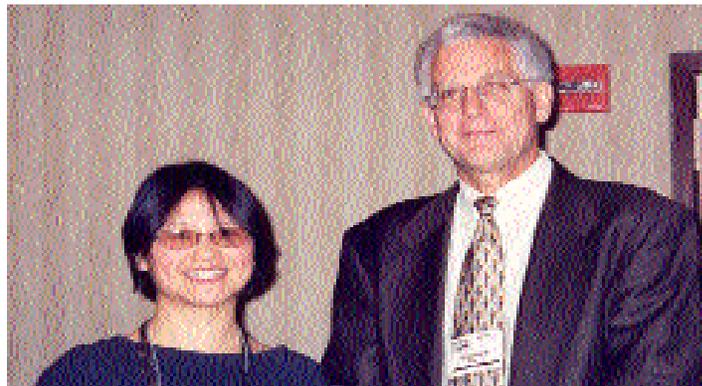
The Department is responsible for protecting the State's natural resources and the safety of patrons visiting the 60,000 acres of state land managed by the state. At left, Environmental Police Officer, Sheila Paquette (left) checks duck hunters in the Providence River. At right, Environmental Police Officer Ed Cabral (right) conducts boating safety inspections in Wickford Harbor.

Open & Effective Government

The Department measured progress toward published targets for the first time; issued a draft environmental equity policy; and continued efforts to improve accountability, responsiveness and service delivery through enhanced management information services, permit streamlining, improved inspection procedures and targeted enforcement efforts.

Work Plans

The year 2001 was the first full year in which the Department's program managers were held accountable for producing results to meet the seven broad goals outlined in the DEM Strategic Work Plan. Some significant targets were met for commercial fisheries, sustainable watersheds and asset management plans, for example, but there were also some delays. Competing priorities, reprogramming efforts, short staffing, and budget constraints caused some delays. Failure of proposed legislation was the cause of other delayed action, notably for the dam program. Factors such as weather and emissions from other states impeded efforts to meet targets such as the federal ozone standard. To view the reports on Fiscal Years 2000-2001 go to www.state.ri.us/dem/pubs/index.htm.



The Department received the Permitting Excellence Award from EPA for ensuring that the permits for all facilities that treat hazardous waste in the State meet the latest federal requirements. Above, Yan Li, a senior engineer in DEM's Office of Waste Management, accepts the award on behalf of the Department from Stephen F. Heare, Director of EPA's Permits & State Program Division in Washington, DC.

Another work plan first was the enhanced collaboration with EPA Region I through the \$5.7 million Performance Partnership Agreement (PPA) between the two agencies for 2002-2003. This was the first time that we know of where an EPA regional office designed and published a work plan keyed to support a state work plan. To view the PPA and related work plans go to www.state.ri.us/dem.

Professional Development Review

The State came to a tentative agreement with AFSCME Local 2881 for a joint committee to explore a process to extend the Professional Development Review (PDR) from nonunion to union staff. The PDR combines performance appraisal and professional development methods to help staff meet objectives for contributing to Department goals.

E-Government

After launching an improved website in January, the Department participated in the selection of a company to manage the State of Rhode Island Portal, which will develop an online transaction system to serve individuals and businesses statewide. Despite contractual and budgetary delays, the Department continued to install a computerized system to track and process applications, completing phase-in of systems in the Offices of Air Resources and several Office of Waste Management programs. EPA awarded the Department a \$500,000 grant to design a component to link permitting data to monitoring and compliance data. The Department expects to provide applicants and other interested parties with access to application status and environmental data when the system is fully implemented in 2003.



On September 12, 2001, the Department hosted a reception to welcome newly appointed EPA Region 1 Administrator Robert Varney to RI. Above, Governor Almond looks on as DEM Director Reitsma and Administrator Varney sign the \$5.7 million Performance Partnership Agreement.

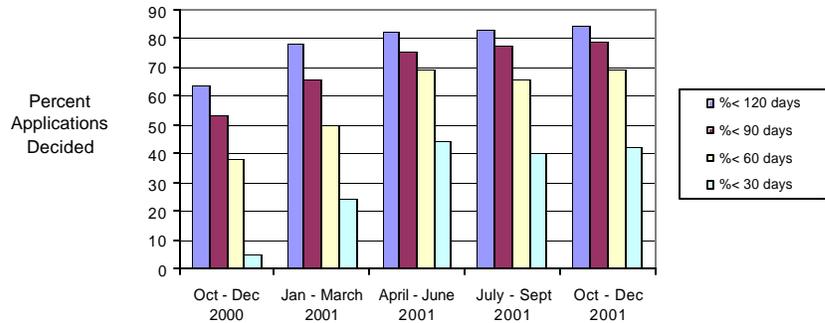
New Geographic Information System (GIS) maps in 2001 include DEM/CRMC jurisdictional boundaries for freshwater wetlands permitting, the boundaries and features of state management areas, and maps of the public outdoor recreation facilities in each city and town. To zoom in and out or pan around an area of interest or to create custom maps, go to the GIS Geo-Data Viewer at www.state.ri.us/dem/maps/index.htm.

Permit Streamlining

The Department made significant progress in streamlining permitting. The Wetlands Task Force of environmental and business leaders, lawyers, consultants and citizens completed a year-long analysis of the Wetlands Permitting Program in March. Task force recommendations implemented include rule changes to clarify application procedures for wetlands near the coast, to allow property owners to apply for emergency wetland permits and to reduce fees for projects that will improve wildlife habitat and water quality. Additional changes underway will simplify fees and application procedures.

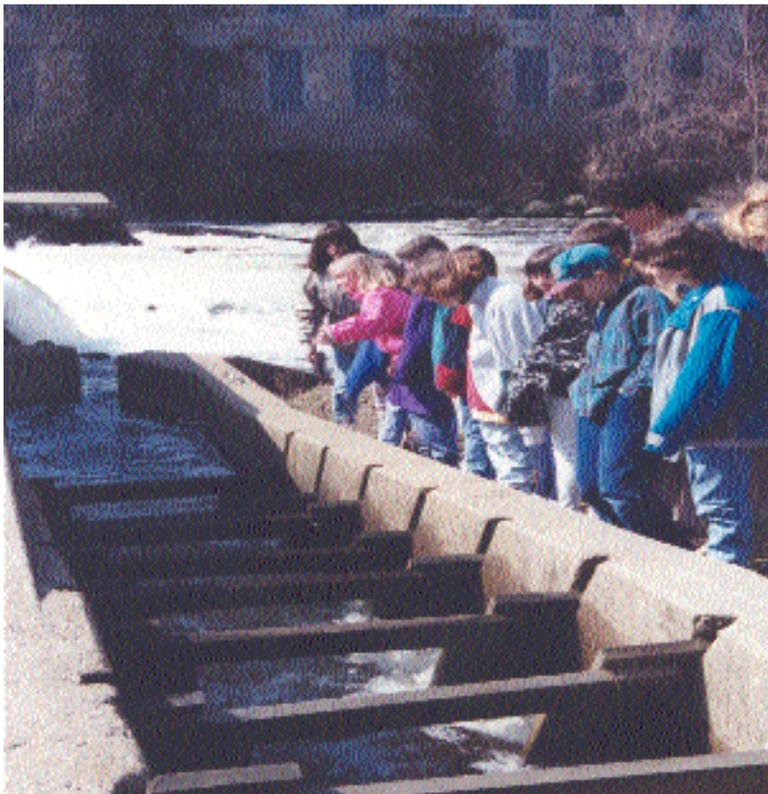
Fact sheets, sample site plans and applications and workshops to help citizens and consultants prepare wetlands applications are beginning to pay off in reduced wetland permitting times. In January the average time for a permit approval was 18.1 weeks. By November the time had been reduced to 7.1 weeks (a 61% reduction). For applications that have no deficiencies the average time is even lower at 3.8 weeks. We expect implementation of additional task force recommendations to produce even further reductions.

Wetland Preliminary Determination Application Decision Statistics



DEM processed more Wetland Preliminary Determination Applications and made faster decisions. By the end of 2001 approximately 40% of Preliminary Determination Wetland Applications were processed within 30 days and more than 65% were processed within 65 days. The average decision time dropped by 36%, from 121 days in 2000 to 77 days in 2001.

Similar task forces completed work on ISDS and Waste Management programs. In response to the Waste Site Remediation Task Force, the Department developed a model settlement agreement, a marginal risk policy to identify sites with limited contamination, and an arsenic policy that takes into account the high background levels of arsenic in Rhode Island soils. Both policies were designed to speed purchase and cleanup of contaminated sites. We are also moving forward with regulatory amendments recommended by the ISDS Task Force and began processes to streamline air pre-construction permits and the review of marina dredging projects.



Reaching Out

In 2001, the Department promoted environmental education and awareness and public participation in many ways:

- Presented environmental and ecology issues to thousands of school children and residents across the State at public speaking engagements
- Trained over 75 teachers on how to use Project Learning Tree, Project Wet, and Project Wild environmental curricula in the classroom
- Promoted youth and adult fishing programs with more than 3000 participants
- Hosted many special events at state parks, including events that raised money for various causes
- Judged science fairs
- Convened new stakeholder groups to reduce greenhouse gas emissions and improve the viability of farms
- Continued Naturalist Education Programs at State parks
- Exhibited in major events such as the RI Flower and Garden Show and the RI Boat Show in Providence and the Eastern States Exhibition in Springfield, MA
- Co-sponsored volunteer litter clean-ups for Earth Day and the International Shoreline Cleanup – Bag It!
- Held open houses and brown bag lunches at DEM headquarters on topics ranging from wetlands permitting to environmental equity
- Began an internal work group to improve DEM's outreach and education coordination
- Conducted Environmental Crime training for 186 elementary school students

At left, 4th grade students learn about Atlantic salmon migration at a fish ladder near Bradford Dye Works in Westerly as part of the Department's Aquatic Education Program.

Fair & Effective Enforcement

A multi-media team approach, focusing on significant noncompliance, using informal approaches to resolving minor violations, and providing compliance assistance and mediation helped save resources and bring better results in 2001.

Air, Water & Waste. In addition to responding to thousands of complaints and seeking resolution through informal enforcement actions, the Department issued 83 formal Notices of Violations (NOVs) with proposed penalties totaling over \$2 million, and reached agreements resulting in penalties of \$1.3 million. Of the \$1.3 million, \$589,900 represents cash payments and \$725,352 represents the cost of Supplemental Environmental Projects.

Supplemental Environmental Projects (SEP's)

A SEP is a project that a violator voluntarily agrees to perform as part of the settlement of an enforcement action. The cash penalty may be lower if the violator chooses to perform an SEP that protects, improves, or reduces risks to public health or the environment. There must be a relationship between the violation and the SEP.

SEP Examples:

A jewelry manufacturer agreed to pay \$15,000 for the production of a guide for small jewelry manufacturers on how to comply with hazardous waste regulations.

A boat manufacturer purchased a "muncher" that chews up excess fiberglass from the manufacturing process for use as filler in new boats that it produces. The company will also demonstrate its use for other manufacturers in RI and encourage them to acquire their own.

While NOVs dropped slightly below levels in the previous two years, the Department boosted efforts to close cases by resolving 53 from past years and 16 cases from 2001. Of the 345 cases issued in the last five years, 70 percent are either under a consent agreement, are closed due to compliance or are pending Superior Court action. Four long-term ISDS cases were resolved through mediation and several wetland cases are pending. The Department also implemented guidelines to help staff conduct inspections that respect the

privacy rights of property owners and issued identification badges to DEM inspectors.

2001 Enforcement Results	Enforcement Actions	Resolved Cases
Air	7	11
Hazardous Waste	6	10
Underground Storage Tanks	13	21
Leaking Underground Tanks	4	3
Wetlands	22	4
Solid Waste	7	6
Water	3	4
ISDS	11	5
Medical Waste	2	-
Multi-Media	7	2
Total	81	66
Dollar Amount of Penalties	\$2,211,909 (proposed)	\$637,334 (collected)

Criminal Investigations. In 2001 DEM reviewed approximately 3,080 complaints, began 49 new criminal investigations and continued 55 investigations from previous years. Investigators prepared approximately 20 cases for criminal prosecution resulting in 57 felony charges, most of them for water pollution violations and unlicensed

solid waste construction and demolition facilities. Criminal cases resolved in 2001 resulted in approximately \$35,000 in fines and penalties including a total of four years court ordered probation and a two-year jail sentence. The funds generated by this program are held in an account that enables the Department to respond to environmental emergencies.

The Department continued its Environmental Crimes Training Project. Our investigators trained 123 local police at the RI Municipal Police Training Academy and the URI Forensic Science Seminar, 136 law enforcement investigators and regulatory inspectors from 15 northeast states who are members of the Northeast Environmental Enforcement Project Association, and 47 FBI agents from Boston's Emergency Response Team.



Environmental Equity Training. Penn Loh, Executive Director of the Alternatives for Community and Environment (ACE) in Roxbury, Massachusetts spoke to DEM employees about ACE's work in environmental equity issues with Boston-area community groups.

Environmental Equity

In August 2001, DEM issued a Draft Environmental Equity (EE) policy that affirms DEM's commitment to the fair and equitable treatment of all Rhode Islanders in policies, programs and actions. The policy states, "Environmental equity means that no person or particular group of persons suffers disproportionately from environmental degradation or intentional discrimination, or is denied enjoyment of a fair share of environmental improvements." The Department is seeking feedback from the public on the draft policy while proceeding with implementation. Efforts include: conducting workshops to educate staff about environmental equity, partnering with EPA Region 1 and neighboring states to develop guidelines for public participation and EE training; increasing multilingual services; and forming an advisory council representative of our diverse constituency. You can find the draft policy on the web at <http://www.state.ri.us/dem/pubs/eequity.htm>

Environmental Excellence and Leadership

Pollution Prevention and Environmental Excellence Award

DEM recognized six Rhode Island individuals and businesses for preventing pollution and excelling in environmental leadership as part of National Pollution Prevention Week in September. The award winners were:

S&A/Paramount Printing, Lincoln
General Dynamics/Electric Boat, North Kingstown
The Naval Undersea Warfare Center, Newport
Mr. Harold Gadon, Cranston
Tytext, Inc., Woonsocket
Community College of RI, Lincoln/Warwick/Providence

The Governor's Awards were created in 1991 by the DEM, in partnership with the Northern Rhode Island Chamber of Commerce, to recognize public and private organizations, businesses and individuals that have implemented pollution prevention within their daily operations. Pollution prevention is characterized by use of materials, processes, or practices that reduce or eliminate the creation of pollutants at a source before it reaches the environment. Below, Governor Lincoln Almond and DEM Director Jan Reitsma present an award to Peter Rainone, of S&A/Paramount Printing.



*Photos courtesy of the Providence Journal:
All front cover, page 10 - Cove Metals and Moniz, page 11, page 16 - osprey, page 18 and page 20.*

*Photos courtesy of the Newport Daily News:
Page 12 - Community Food Bank, page 17 - Forth Wehterill*

Vernal pool photo, page 14 provided by Scott Edgar, Research Associate, URI Department of Natural Resources Science.

Frank Golet photo, page 14, provided by URI.

All other photos and maps provided by DEM.

Printed with vegetable-based inks on 30% recycled paper.

Alfred L. Hawkes Award for Conservation and Environmental Accomplishment

The Alfred L. Hawkes Award for Conservation and Environmental Accomplishment, established in 1993 by DEM, acknowledges those who have “with uncommon effort, immeasurably advanced the preservation, protection, and enhancement of the natural resources of our state.”



The 2001 recipient of the award was Francis Golet, Professor of Wetland Ecology and Director of Graduate Studies at the University of Rhode Island's Department of Natural Resource Science. Frank has provided tremendous service as a scientist and leader in the field of wetland ecology. We at DEM have depended on his research throughout his career to provide scientific backing to our regulatory decisions. Frank was a key participant of the Wetlands Task Force that recommended a number of changes to the Wetlands program and regulation.

We are fortunate to have several of his former students in leading positions in our freshwater wetlands program, and more than 30 of his prior students are employed throughout DEM in programs including fish and wildlife, forestry, sustainable watersheds, water resources and technical and customer assistance.

Frank's dedication to improving our knowledge of wetlands through teaching and research, his personal participation in government to effect positive change in the field of wetland science, and his continual pursuit of excellence made him the perfect choice for this award.

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Thank you to the numerous members of DEM's staff who contributed time and content to the development of Annual Report 2001.

