

Rhode Island Nonpoint Source Pollution Management Program

**Report of Activities
October 1, 2010 – September 30, 2011
(FY2011)**



Sand filter under construction (stormwater BMP), Narragansett, RI, Summer 2011

Rhode Island Department of Environmental Management
Office of Water Resources

Introduction

Protecting and restoring the waters of the state – surface water, groundwater and wetlands – from pollution due to nonpoint sources continues to be an important focus of state water pollution control programs in Rhode Island. Managing nonpoint sources (NPS) of pollution, such as stormwater runoff and failing septic systems, is challenging. Available monitoring data reveals nonpoint pollution as a widespread problem affecting every watershed in the state. Nonpoint sources are suspected of contributing to the impairments in a majority of the surface waters included on the state’s impaired waters list, also known as the 303(d) list.

To prevent and combat NPS pollution, the Rhode Island Department of Environmental Management (DEM) Nonpoint Source Pollution Management program encourages various actions by state and local governments, businesses, watershed groups and individual landowners. The DEM NPS program activities are guided by the RI Nonpoint Source Pollution Management Plan (1995) as well as federal Environmental Protection Agency (EPA) requirements governing Clean Water Act Section 319 funds. The following report describes the accomplishments of DEM and its partners, with respect to nonpoint source pollution for fiscal year 2011 (October 1, 2010 – September 30, 2011). This includes activities supported by Section 319 funds awarded via the Performance Partnership Agreement with EPA, as well as related activities supported by other funding sources.

Along with point source pollution controls, the NPS program is an essential part of RI’s overall effort to restore and protect water quality. DEM remains focused on the state’s major sources of NPS pollution: stormwater runoff and septic systems. While efforts to enhance state programs are pursued, it will be equally important for the state to continue to assist municipalities in their efforts to actively implement local wastewater and stormwater management programs including complying with new mandates to utilize low impact development (LID) techniques for stormwater management.

Local Grants for NPS Pollution Management

A primary ongoing activity of the DEM NPS Program is the distribution and management of grants from federal Clean Water Act Section 319 funds to local entities. These funds are awarded on a competitive basis via a Request for Proposals (RFP). A list of Section 319 grants managed during the 2011 fiscal year is provided in Attachment 1. The 10 projects that were completed this fiscal year are briefly described below. The Section 319 grant amount provided for the project is in parentheses.

It should be noted that the “grant amount” indicated in this report for the projects is not the total cost of the project. Grant recipients are required to provide a minimum match in funds or in-kind services. This required minimum match ranges from 10% to 40% (depending on the type of project) of the grant project budget (grant plus match). Completion of the recipient’s desired project occasionally requires more than the minimum match.

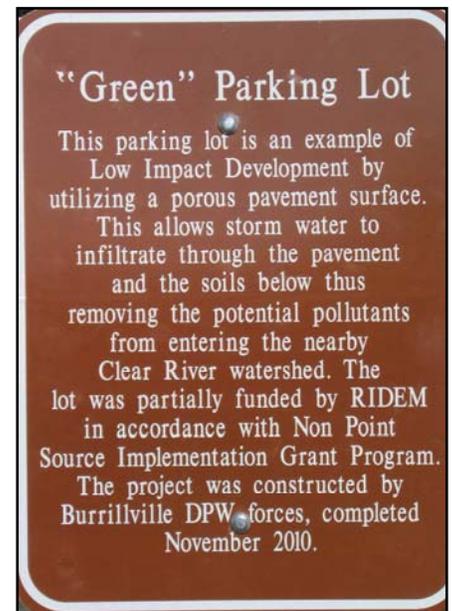
Bristol: Town Beach Stormwater Pipe Retrofit Design and Permitting Project (\$36,620)

Bristol Town Beach is located on Narragansett Bay immediately to the north of Colt State Park. The Rhode Island Department of Health's Beach Program has documented a significant history of closures at the Town Beach resulting from bacterial contamination after rainfall events. The Town of Bristol is undertaking a multi-pronged approach to address water quality concerns at the Town Beach, including this project for design of a BMP to address the quality of stormwater from existing storm drainage pipes which discharge just north of and adjacent to the beach.

The existing stormwater discharge pipes consist of a 36" concrete pipe and a 12" corrugated metal pipe which collect stormwater from a large residential area located to the west of Hope Street (Route 114) and east of Narragansett Bay. This project identified the tributary subwatershed limits and characteristics, performed a detailed stormwater analysis of the subwatershed, identified prospective water quality BMPs and possible locations within the watershed, focusing on those which treat stormwater for bacteria. From those options, the Town identified a wet vegetated treatment system to be the most feasible BMP and the project produced 75% construction plans that were submitted to DEM for permitting. The Town was subsequently awarded a grant (currently in progress) for construction of this BMP.

Burrillville: Stillwater Mill Porous Pavement Auxiliary Parking Lot Project (\$66,030)

The Town of Burrillville had an undeveloped site of approximately 0.5 acres adjacent to the existing public library parking lots that it wished to develop for auxiliary parking. Prior to development, runoff from the site flowed onto the existing library parking area and then discharged to the Clear River less than 100 yards from the proposed lot. The Town decided to develop an auxiliary 35 space parking lot using porous pavement to reduce the amount of stormwater pollutants discharged to the Clear River.



The Town had a design plan prepared for a porous pavement system at the site that was reviewed by Robert Roseen, Ph.D., P.E., of the University of New Hampshire Stormwater Center, who provided the designs for porous pavement included in the recently updated RI Stormwater Design and Installation Standards Manual. Part of the work done to prepare the site was done using the Town's own DPW workers. Once the pavement installation was complete, an educational sign was installed explaining the porous pavement system so the public would be informed of this innovative stormwater treatment installation.

East Greenwich: Sun Valley Stormwater Infiltration Project

(\$147,000 Section 319 grant and a \$173,000 grant from the state's Bay and Watershed Restoration Bond Fund)

Prior to this project, untreated stormwater from the Sun Valley residential neighborhood (lot sizes approximately one-quarter acre) and associated commercial and industrial areas totaling 54 acres discharged to the Hunt River, which is impaired due to pathogens. The purpose of the project was to retrofit the existing stormwater system by infiltrating as much of the stormwater as possible.

The project provided for the design, permitting and construction of 62 individual infiltrating catch basins throughout the neighborhood. The project was combined with the Town's project to upgrade the water system and repave the streets. The project reduces the volume of stormwater entering the Hunt River and the pollutants associated with that stormwater, including sediment, nutrients and pathogens.

Foster: Salt Storage Structure (\$51,203)

The salt storage structure at the Foster Public Works facility lies within the watershed of the Scituate Reservoir, which provides over 60% of Rhode Islanders with drinking water. Prior to the implementation of this project, the loading, unloading and related work at the salt storage structure resulted in salt contaminated runoff. Foster needed a properly sized and constructed facility that protected the Scituate Reservoir watershed from salt contamination.

The project involved the construction of a wood framed structure supporting a metal roof with large concrete block walls for a sand/salt storage facility for the Foster Public Works Department. The new structure prevents precipitation from falling on the material, controls and collects spills, improves the efficiency of material handling, eliminates the need for constant handling of small quantities of materials with the accompanying loss to the environment, and increases the amount of maneuvering space needed by equipment to prevent damaging the building.

Jamestown: Salt Storage Structure (\$120,000)

Prior to the implementation of this project, the Town of Jamestown stored winter sand and salt for roadway deicing outside at the Wastewater Treatment Facility located at Taylor Point. These piles were covered by a tarp, which did not provide adequate protection from storm events.

The project provided funding for the construction of a wood framed steel roof barn-type salt/sand storage facility for winter roadway maintenance used by the Town of Jamestown Department of Public Works. The new salt storage facility is located at the same location as the original storage areas, and it houses all on-site salt and sand materials to prevent them from eroding into the nearby wetlands.

Middletown: Slate Hill Farm Stormwater Retrofit (\$33,598)

Bailey's Brook, a major tributary to Aquidneck Island's public water supply system, has been determined to be impaired by stormwater runoff from urbanization of the watershed. One of Bailey's Brook's unnamed tributaries was adversely impacted by untreated stormwater from the Slate Hill Farm residential subdivision. This 65-unit subdivision was designed and constructed in the early 1960s, when the primary consideration for stormwater management was rapid off-site conveyance with no water quality treatment provided before water flowed into the nearby wetland and tributary.

The project designed and installed BMPs in conjunction with public water and sewer repairs in the subdivision that the Town of Middletown, through the Department of Public Works (DPW) was performing in the Slate Hill Farm subdivision. Two swirl separator units were installed as pre-treatment to biofiltration swales within the subdivision road rights-of-way. This system provides sediment removal, volume reduction and treatment of stormwater via infiltration.

Narragansett: Narrow River Stormwater Abatement at Pettaquamscutt and Edgewater

(\$450,456 Section 319 grant and a \$660,519 grant from the state's Bay and Watershed Restoration Bond Fund)

The Narrow River (or Pettaquamscutt River) can be described as a composite of a tidal inlet and back bay, an estuary, and two fjord-like ponds. Due to pathogens and nitrogen, the Narrow River has been the focus of many studies and environmental plans over the years and it is currently closed to shellfishing due to high levels of pathogens. The DEM "Fecal Coliform TMDL for the Pettaquamscutt (Narrow) River Watershed, Rhode Island (2001)" identifies storm water as the source of impairment to the river and specifies nine outfalls for remediation. Four of these nine outfalls were addressed in this final design, permitting and construction project.

The project treats the runoff from average-sized rainstorms that flow to stormwater outfalls to the Narrow River in the Edgewater and Pettaquamscutt Terrace neighborhoods and directs that stormwater into the ground for treatment. The project included 4,300 linear feet of sub-surface infiltration systems along town-owned roads in various locations throughout the neighborhoods; a 10,000-square-foot sand filter system on RIDOT-owned property at Bridgetown Road; and a level spreader north of the Wilson

Drive pumping station. By infiltrating this stormwater, pollutants are removed from water entering the Narrow River at these outfalls.

RI DEM: Burlingame Picnic Area Cesspool Replacement (\$100,000)

Burlingame State Park picnic area is a popular state recreation area on the shore of Watchaug Pond in Charlestown, RI. The picnic area offers 50 fireplaces, toilets, drinking water (onsite public drinking water well), a swimming beach and a nearby DEM boat launch. The restroom facility, constructed in the 1930s, was served by a cesspool. The cesspool was in very coarse soils located approximately 350 feet from Watchaug Pond and provided little treatment of effluent from the restroom facility.



The project involved the proper abandonment of the existing cesspool and the design and placement of 4 single compost toilet buildings for use at the picnic area. This eliminated all nutrient and pathogen loading from the picnic area to Watchaug Pond.

Warren: Town Beach Stormwater Treatment Feasibility and Design (\$19,615)

Warren Town Beach is located off Water Street along the east bank of the Warren River. DEM and EPA have designated the beach as a “Flagship Beach,” denoting it as a high-use beach that requires frequent monitoring, assessment and reduction of nonpoint source pollution due to its poor water quality. There is a persistent pathogen impairment at Warren Town Beach that causes beach closures following wet weather events -- 18 beach closures over the past 5 years were documented by the Rhode Island Department of Health’s Beach Water Quality Monitoring Program.

This project was for the development of a feasibility study of the subwatershed that contributes stormwater to the Town Beach, paying particular attention to pathogen loading and to examine the feasibility of constructing low impact development (LID) BMPs along Water Street. Secondly, the project would develop conceptual designs for LID retrofit(s) for those BMP(s) found to be feasible. Two BMPs were determined to be feasible during the study – a porous pavement parking lot at the Town’s Burr’s Hill Park property and the installation of vegetated swales on the western (i.e. water) side of Water Street.

Warwick: Connection of Warwick Fire Station No. 5 to Municipal Sewer (\$25,711)

The City of Warwick’s Fire Station No. 5 lies within the watershed of the Maskerchugg River, which is impaired due to pathogens, and which ultimately flows into Greenwich Bay. The Fire Station was being served by a septic system that was failing. DEM provided a grant to connect the facility to the sewer system and the City of Warwick funded the extension of the sewer line to the Fire Station.

The project provided for the installation of an oil/water separator, sampling pit, grinder pump, and discharge line to replace the existing failed septic system. This resulted in the elimination of nutrient and pathogen loading from the Fire Station to the Maskerchugg River.

Ambient Monitoring – Identifying NPS Pollution in Surface Waters

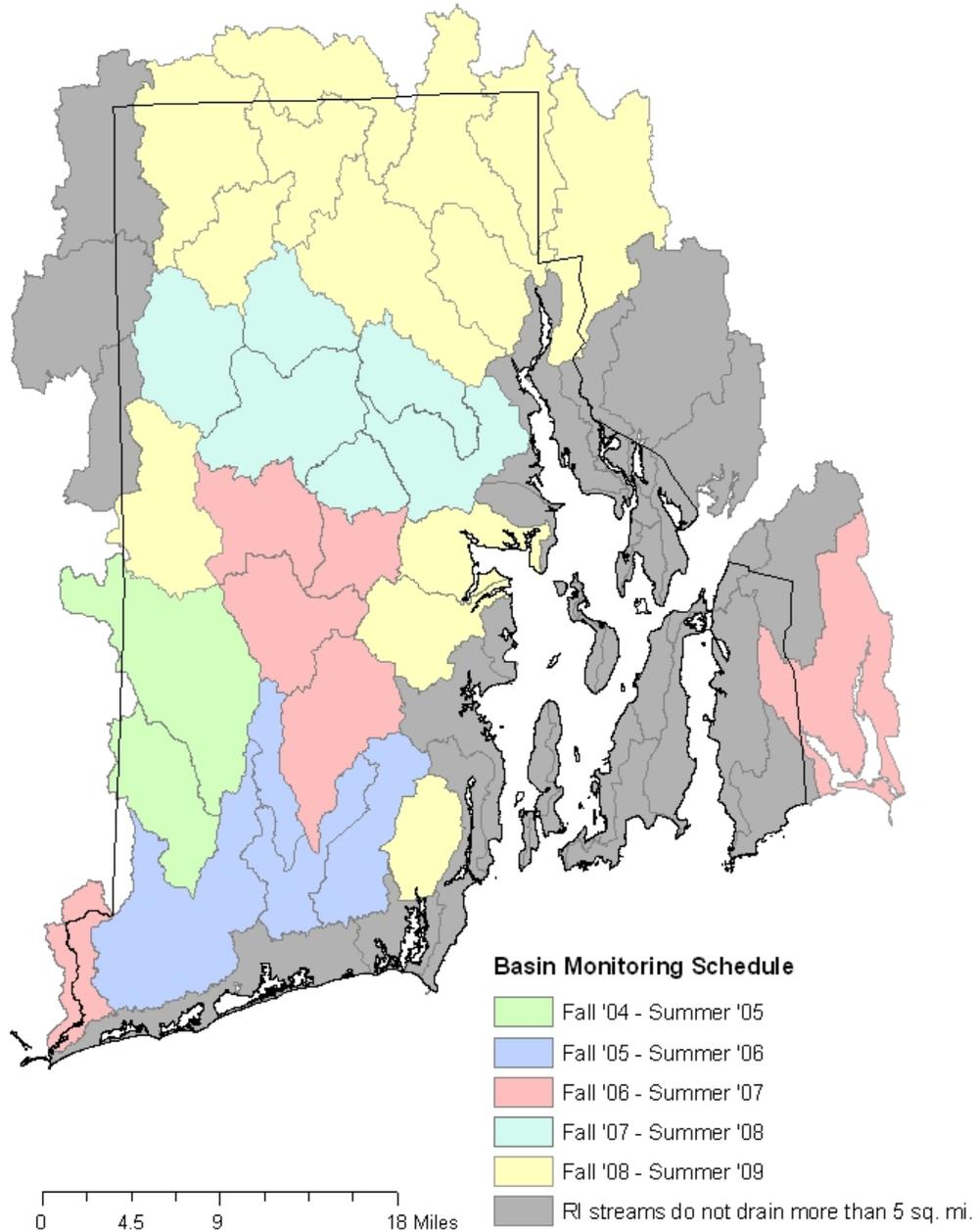
To help assess the effects of NPS pollution, the DEM NPS program continues to contribute to the implementation of the statewide RI Water Monitoring Strategy by providing funding that supports volunteer-based monitoring of lakes and biological monitoring in rivers and streams. Both programs are essential to assessing whether the state's freshwaters support healthy aquatic communities.

DEM's partnership with the URI Watershed Watch Program from 1999 to the present increased the number of lakes monitored seasonally by volunteers and has provided the primary source of data that allowed DEM to assess and report on 75% of lake acres in the 2010 Integrated Water Quality Monitoring and Assessment Report. The data is used to help identify water quality impairments. As there are no point discharges of sanitary wastewater authorized for lakes in the state, water quality pollution problems in lakes are largely attributable to nonpoint source pollution sources.

Biological monitoring of rivers and streams is currently accomplished by sampling for macroinvertebrates. This biological community has proven to be a reliable indicator of water quality and habitat condition that reflects the cumulative effects of various stressors, including nonpoint source pollution. Sampling and taxonomic identification is performed by a contractor (currently ESS Group, Inc.) for DEM at 45 or more locations annually. The sampling has been targeted to support the implementation of the rotating basin approach for assessing rivers and streams since 2004. Almost 200 stations have been sampled via this program, providing a statewide dataset that supports a more complete assessment of water quality conditions in rivers and streams. The data are used to identify biodiversity impairments in rivers and streams. DEM has found such impairments to be widely distributed in the state and often associated with nonpoint sources of pollution. Figure 1 reflects which watersheds were sampled under this monitoring strategy during the first five-year basin rotation. During 2011, DEM initiated the second basin rotation cycle by sampling in the Wood-Pawcatuck watershed region.



RIDEM Surface Water Monitoring Program Chemical and Biological Sampling 2004-2009 Rotating Basin Schedule



*Although watershed basin lines extend beyond state borders, targeted sites were located within state boundaries.

Figure 1. River Basin Monitoring

Watershed Planning

The Nonpoint Program further advanced Rhode Island's approach to developing watershed-based plans during 2011 for the 24 watershed planning areas designated in RI (see Figure 2). Watershed plans for each area will present in a clear, concise format, a comprehensive overview of the watershed that the public and policy makers at all levels can use to identify key watershed characteristics and most importantly, actions that are necessary to restore and protect water quality. The plans will build on existing documents, particularly the TMDL reports. Recognizing the role of municipal government in managing nonpoint sources of pollution, the emphasis will be on identification of appropriate local actions in the areas of improving stormwater management, local land use regulations, and onsite wastewater management, as well as other watershed specific issues.

A technical assistance project was initiated in FY2010 utilizing EPA's consultant, FB Environmental, to work with DEM on the development of 2 watershed plans as a pilot for DEM's approach in the Barrington-Palmer-Warren Rivers watershed and the Bristol-Kickemuit watershed. In April 2011, kick-off meetings for the planning process were held in Warren, RI and Seekonk, MA to introduce the process, engage stakeholders to solicit their input in the process, and to identify key water quality issues and concerns in the watersheds. Stakeholders included town board/council members, town/regional planners, natural resource professionals, non-profit organizations, and watershed landowners. Meetings were then held in each watershed town in July to review municipal programs, receive feedback on draft recommendations and identify feasible implementation strategies in each town. These two watershed plans will be completed in FY2012.

Developing Water Quality Restoration Plans (TMDLs)

DEM utilizes Section 319 funding, in conjunction with other state and federal funds, to support development of water quality restoration plans, also known as Total Maximum Daily Load (TMDLs). The plans, required by the federal Clean Water Act, are developed after targeted monitoring and field investigation of a watershed area. The plans identify sources of pollution and determine the level of reduction in pollutant loadings required to meet water quality standards and criteria in specific waterbodies. To support implementation of water restoration actions, the NPS program collaborates with the TMDL program to identify needed NPS abatement projects; e.g. structural pollution controls, BMPs, and encouraging local entities to take advantage of financial assistance programs for such projects, including distribution of Section 319 funds by DEM.

Begun in 2008, Rhode Island utilizes the Integrated Report format to meet its Clean Water Act Section 305(b) and 303(d) list reporting requirements. For the 2010 reporting cycle, assessments were completed on a total of 881 assessment units. Of these, 162 assessment units or 133 named waterbodies have at least one waterbody impairment, and are included on the state's 2010 303(d) list. During FY 2011, TMDL Program staff assisted with baseline monitoring efforts (including deployment of continuous monitoring dissolved oxygen probes in one coastal pond).

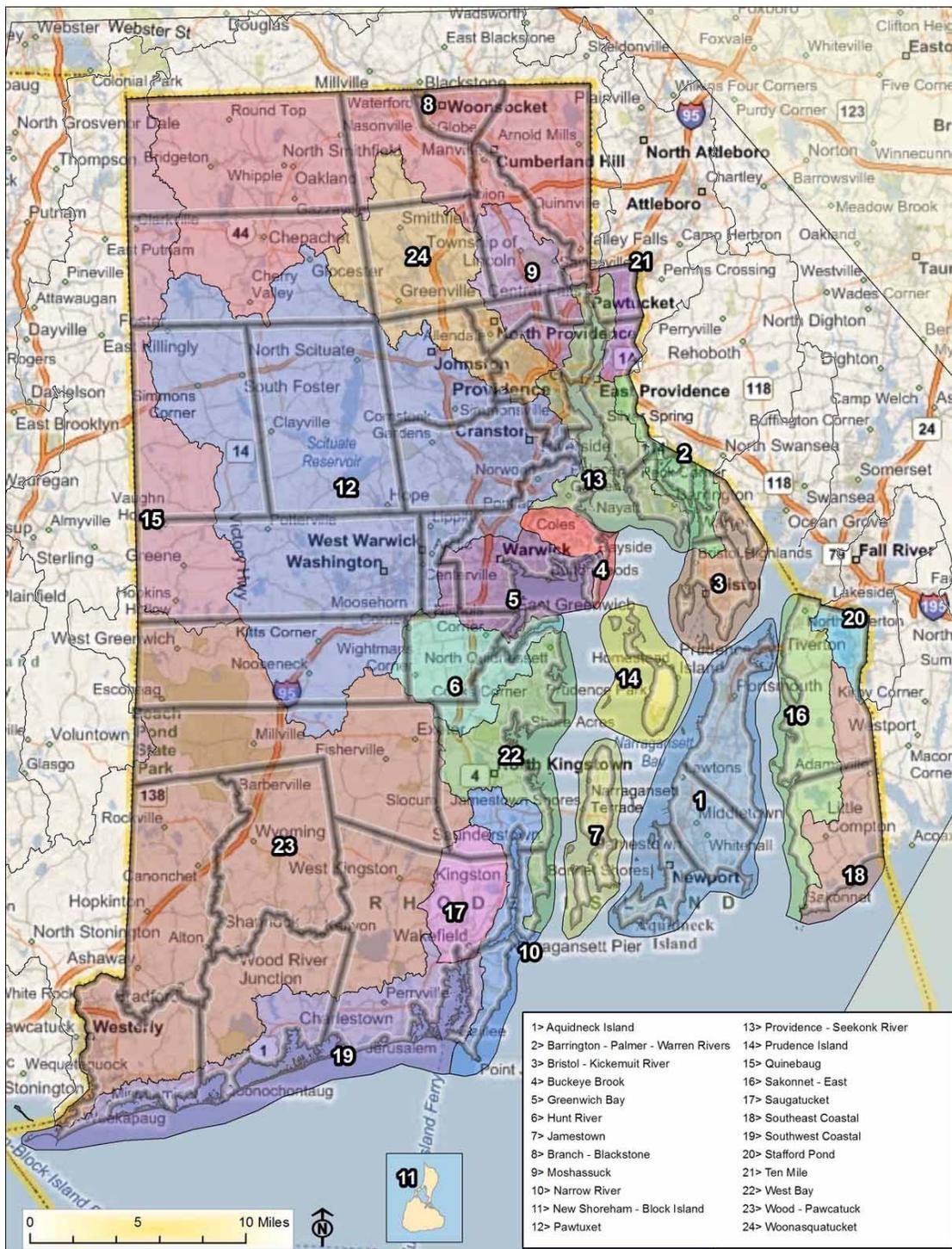


Figure 2. Watershed Planning Areas

Between October 2010 and September 2011, the DEM Office of Water Resources completed water quality restoration studies (Total Maximum Daily Load studies) addressing bacteria impairments on the Pawcatuck River estuary/Little Narragansett Bay (and Mastuxet Brook) (approved December 1, 2010), and nutrient related impairments on Belleville Ponds (approved December 28, 2010). The Office also worked with EPA Region 1 and EPA contractor, FB Environmental to complete development of the statewide bacteria TMDL addressing impairments to 59 waterbodies (approved September 22, 2011). Lastly, Office of Water Resources staff continued work to develop water quality restoration plans addressing metals and pathogen impairments on the Blackstone River, Mill River, and Peters River, and nutrient impairments on Scott Pond; and metals, pathogen and nutrient impairments on the Ten Mile River and its three impoundments. A listing of all approved and draft TMDLs, their status and further information is found at <http://www.dem.ri.gov/programs/benviron/water/quality/rest/index.html>.

In addition, Office of Water Resources staff participated in a number of meetings and workgroups identified below to encourage and assist in the implementation of actions to improve water quality.

- Provided technical review and participated in meetings with various municipalities: 1) served on technical review committee for City of Warwick on 319 funded stormwater retrofit feasibility study and BMP design project; 2) Participated on Steering Committee for Roger Williams Park Ponds Water Quality Restoration Study (to among other objectives, implement Roger Williams Park Ponds TMDL) led by City of Providence Parks Department and Narragansett Bay Estuaries Program with STAG grant; 3) presentation to Cranston Public Works Committee on Stormwater Utility Districts.
- Provided technical review and participated in meetings with RIDOT to evaluate alternatives for resolving beach closures caused by stormwater discharges at the Scarborough State Beach.
- Outreach: 1) participated as speaker at a community organized Urban Ponds Procession through the streets of South Providence in June 2011 bringing attention to efforts to restore Mashapaug Pond and Roger Williams Park Ponds; 2) With the URI Nonpoint Education for Municipal Officials Program, Save the Bay, and other partners, organized a three workshop series on Stormwater Utility Districts to be held in FY 2012.
- Attended meetings organized by Natural Resources Conservation Service including the State Technical Team meetings and various sub-committee meetings to coordinate on implementation of Farm Bill programs (EQIP, WHIP) relative to TMDL and other state water quality priorities.
- Participated on various standing and ad-hoc groups providing technical and policy development support on: DEM Wastewater Re-use project, RI Stormwater Design and Installation Standards Manual, RI Water Resources Board Water Allocation Committee, State Conservation Committee Goose Control Management project, and DEM Water Quality and Wetland's Restoration Team.
- Working with others in Office of Water Resources, developed screening level monitoring program for cyanobacteria, evaluated monitoring data as it was collected and communicated results as to need for public health advisory to RI Department of Health; also worked with Department of Health on communication strategy for advising communities and the general public about public health concerns associated with cyanobacteria blooms
- Worked with the Rhode Island Audubon Society and Blackstone River Coalition who were offering on-site assistance to small and mid-sized commercial and industrial property owners in the Towns of

Lincoln and Cumberland on low cost pollution prevention and stormwater retrofits – to target their outreach efforts to the owners of those parcels identified as highly impervious, and to coordinate on general permit requirements. Presented coordinated effort at 2011 NPS conference

- Coordinated with Connecticut Department of Environmental Protection and Save the Bay in organizing bi-state workshop on Pawcatuck River Water Quality Restoration.
- Provided technical support to Department of Health in developing monitoring program regime for the Newport Water Department’s water supply reservoirs.
- Participated in technical advisory meetings on developing indicators (led by Narragansett Bay Estuary Program).

Stormwater Management

Stormwater has been identified as one of the major sources of water quality degradation in RI. The Nonpoint Source Program Clean Water Act Section 319 grants to communities reflects the importance of stormwater management with 60% of the active and closed grants listed in Attachment 1 directly associated with stormwater related projects.

Stormwater Manual

As was reported in last year’s Annual Report, DEM and the RI Coastal Resources Management Council (CRMC) successfully finalized the updated “RI Stormwater Design and Installation Standards Manual” (December 2010), which dramatically impacts the design of new development and redevelopment projects. The goal of the revised Manual is to integrate the concepts of low impact development in the planning and design of stormwater management as required by the RI “Smart Development for a Cleaner Bay Act of 2007” (RIGL 45-61.2) and to update the Manual with the latest research and technology. The Manual became effective January 1, 2011 and has been applied to permit applications received after that date. See DEM’s Stormwater Manual webpage at:

<http://www.dem.ri.gov/programs/benviron/water/permits/ripdes/stwater/t4guide/desman.htm>

The most significant changes in the 2010 RI Stormwater Manual compared to the previous Manual from 1993 are:

- Low impact development is required to the maximum extent practicable;
- Design precipitation rates were revised based on latest rainfall data;
- Recharge criterion was added to require infiltration of a portion of runoff from impervious surfaces;
- Raised water quality pollutant removal targets for stormwater management practices;
- BMP options for water quality treatment have been revised based on documented poor performance of previously accepted practices (extended detention and wet basins no longer acceptable as stand-alone practices);
- Extended detention of the one-year storm is now required;
- Special design requirements for discharges in cold-water fisheries;
- Special requirements for land uses with higher potential pollutant loadings; and
- New approach and criteria for stormwater management for redevelopment projects.

Low Impact Development

What is Low Impact Development (LID)? LID is a comprehensive approach to managing stormwater that is integrated into a site design to minimize the hydrologic impacts of development. In the past, the landscape was altered significantly to fit the style of development resulting in conventional management practices often described as “pipe-to-pond”. In contrast, the LID process is reversed – the development is shaped to fit into the landscape. The primary goal of LID is to reduce runoff and mimic the predevelopment site hydrology by using site planning and design strategies to store, infiltrate, evaporate, and detain runoff as close as possible to the point where precipitation reaches the ground. Stormwater is managed in smaller, cost-effective treatment practices located throughout the development site rather than being conveyed to and managed in one or more centralized facilities located at the bottom of drainage areas.

The 2010 Stormwater Manual establishes 11 required minimum stormwater management standards for development and redevelopment projects. The first standard is compliance with LID site planning and design strategies:

LID site planning and design strategies must be used to the maximum extent practicable in order to reduce the generation of the water runoff volume for both new and redevelopment projects...If full compliance is not provided, an applicant must document why key steps in the process could not be met and what is proposed as mitigation. The objective of the LID Site Planning and Design Strategies standard is to provide a process by which LID is considered at an early stage in the planning process such that stormwater impacts are prevented rather than mitigated for.

Use of LID to the maximum extent practicable is often defined by the current local standards for development, which can limit the application of accepted LID practices. In FY2011 DEM produced the “Rhode Island Low Impact Development Site Planning and Design Guidance Manual” to provide examples for local planning officials of how their ordinances may be amended to avoid and reduce the impacts from development and encourage more effective implementation of LID practices. These recommended site planning and design techniques can also help preserve community character, reduce flooding, and reduce municipal operation and maintenance costs. The LID topics discussed in the Manual are: conservation development, riparian buffer standards, site clearing and grading standards, roadway design, parking guidance, compact development, landscaping and special purpose ordinances that address impervious cover, erosion and sediment control, review and inspection fees and stormwater utility districts. For each topic, information is provided on the current situation, perception and realities, benefits and RI specific case studies. The LID Manual can be found on DEM’s Stormwater Manual webpage provided above.

Stormwater Manual and LID Training

Extensive training on the Stormwater Manual and LID for designers, contractors and municipal officials occurred during FY2011.

Stormwater Manual training sessions provided by DEM and CRMC with major assistance by the University of Rhode Island Cooperative Extension Nonpoint Education for Municipal Officials (NEMO)

Program are listed below. Information about each workshop, including agendas and handouts can be found on the NEMO webpage at <http://www.uri.edu/ce/wq/NEMO/Workshops-Support/index.htm>

- Manual Overview, January 13, 2011, full day
- Overview of BMP Construction and Maintenance, January 19, 2011, full day
- Designing Effective Stormwater Management Systems, March 22, 2011, full day
- Detailed Specifications and Measures for BMP Construction and Maintenance, March 24, 2011, full day
- RI Residential Rain Garden Training Program, March 31 and April 1, 2011, one and one-half days
- LID for Linear Transportation Projects: Using the Rhode Island Stormwater Design and Installation Manual to Design Green Streets, July 13 and August 25, 2011, full day (same program each day)

Trainings on the Rhode Island Low Impact Development Site Planning and Design Guidance Manual (LID Manual), provided by DEM and the Narragansett Bay National Estuarine Research Reserve (NBNERR) Coastal Training Program (CTP), are listed below. Information about the workshops, including agendas and handouts, may be found on the NBNERR CTP webpage at <http://www.nbwctp.org/programs/LID2.html>.

Low Impact Development Site Planning and Design Workshops:

- February 10, 2011, 3 hours
- February 11, 2011, 3 hours
- April 8, 2011, 3 hours
- May 25, 2011, a.m., 3 hours
- May 25, 2011, p.m., 3 hours

Low Impact Development Site Planning and Design Presentations:

- DEM Office of Water Resources staff, February 14, 2011, 1.5 hours
- Washington County Regional Planning Council, March 31, 2011, 1.5 hours
- Scituate Reservoir Watershed towns, September 13, 2011, 1.5 hours

Stormwater Utilities

During the summer and fall of 2011, the Office of Water Resources staff worked with a seasonal employee, funded by a grant from the Narragansett Bay, Watersheds and Rivers Coordination Team, to conduct stormwater utility feasibility studies for the Towns of Middletown and Westerly. The drivers and compelling arguments to consider adoption of a stormwater utility in each town were described. These included a discussion of town specific stormwater problems, the actions taken by each town to address these problems/issues, and what more needs to be done going forward.

Working with local officials, the costs associated with both current stormwater management activities and future needs were also determined. As part of the study, 2010 satellite imagery was analyzed to create up-to-date impervious cover data for each of these towns. The Geographic Information System data layer of the 2010 impervious cover was used to determine the median impervious cover for single

family lots in each town. This value, expressed as the Equivalent Residential Unit (ERU), serves as the basis of the simple rate structure used in the feasibility study. The projected funding to meet future stormwater management needs was set as the desired stormwater utility annual revenue. This amount was divided by the total ERUs in each municipality to determine the annual fee per ERU. The fee for each parcel can be calculated by multiplying the number of ERUs within the parcel by the rate per ERU. The Office of Water Resources staff continues to work with municipal officials in Middletown and Westerly in consideration of possible next steps.

Improving Onsite Wastewater Management

Onsite wastewater treatment systems (OWTSs) are another major source of nonpoint pollution in RI. DEM estimates that there are approximately 157,000 OWTSs in the state, serving roughly 30% of the state’s population. Permits for all onsite systems in the state are issued by DEM.

Municipal Onsite Wastewater Management Programs

DEM has long supported local actions to manage onsite wastewater treatment systems. The development of an onsite wastewater management plan is the first step recommended by DEM for local management. Figure 3 shows the status of the development of Onsite Wastewater Management Plans in RI as of October 1, 2011.

Once a community has a DEM approved Onsite Wastewater Management Plan, the community is eligible to participate in the state’s Community Septic System Loan Program (CSSLP) which is administered by the Clean Water Finance Agency. Communities participating in the CSSLP can access funds from the state’s Clean Water Revolving Loan Fund, which can then be loaned to homeowners at a 2% rate for 10 years. Over the past 12 years, the CSSLP has issued 29 loans to 11 towns totaling \$7,900,00. The loans awarded to communities in FY 2011 are provided below.

CSSLP Loan Amounts: October 1, 2010 and September 30, 2011

Town	Loan Date	Amount
Glocester #2	October 7, 2010	\$300,000
Bristol #1	January 15, 2011	\$300,000
Total for the period		\$600,000

Note: the number after the town represents the number of loans awarded the community. For example, “Glocester #2” – this is the second award to Glocester.

Onsite Wastewater Management Plans Status as of October 1, 2011

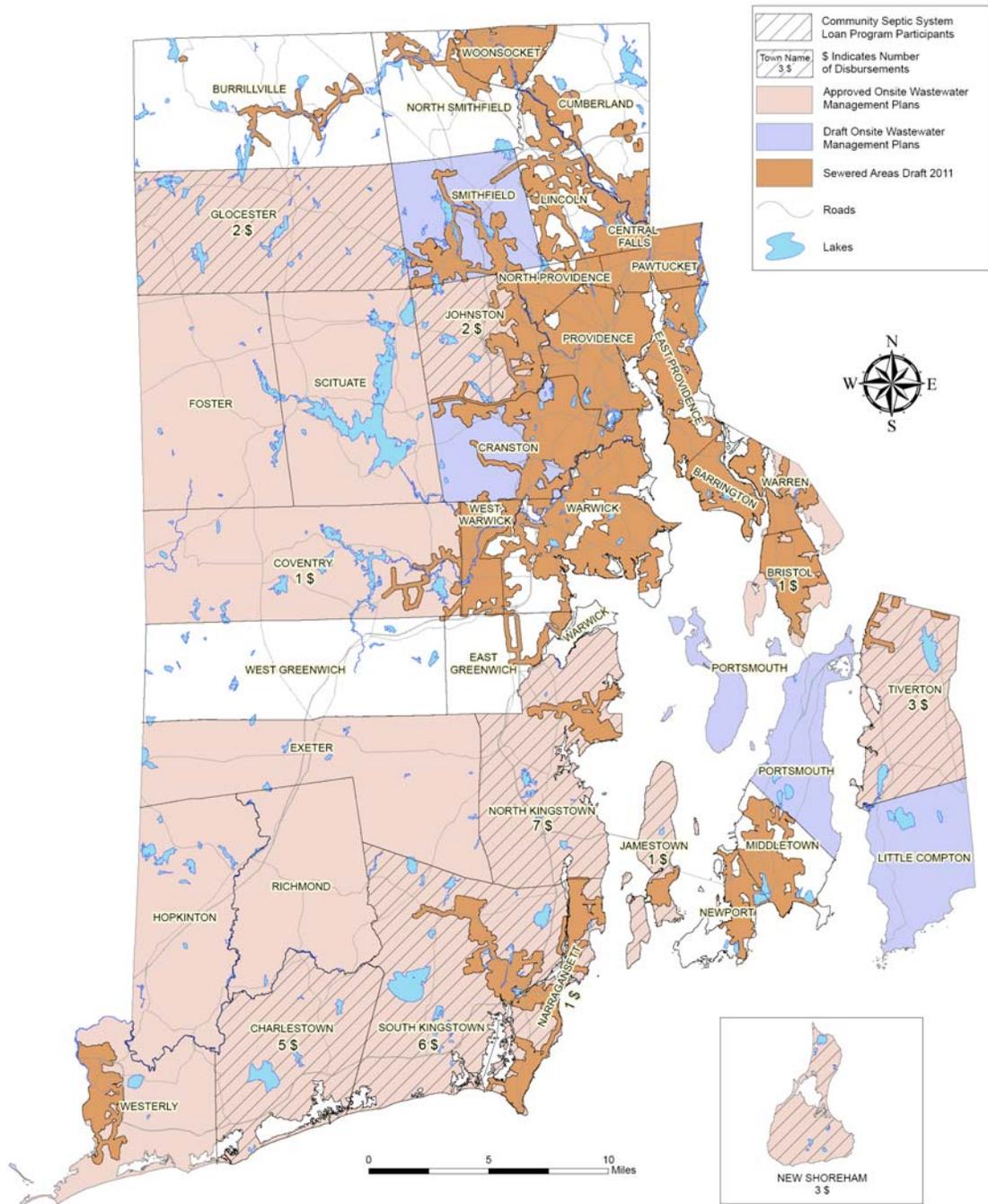


Figure 3. Status of Onsite Wastewater Management Plans in RI (October 1, 2011)

In addition to the CSSLP, the Clean Water Finance Agency has implemented the Sewer Tie-In Loan Fund (STILF). Modeled after the CSSLP, the STILF provides money to the local sewer system which is then loaned to homeowners at a 2% interest rate to connect their residences into the local sewer system, thus removing a source of nonpoint pollution. Loans of \$150,000 each have been provided to the sewer systems in Warwick and North Smithfield as of September 2011 for this program.

North Kingstown Onsite Wastewater Management Tracking Efforts

A key component of any municipal onsite management program is tracking the maintenance activities of the identified systems and monitoring compliance with the local program. The Town of North Kingstown has been effectively using a web-based inventory and tracking system provided by Carmody Data Systems to support their local oversight of onsite system management. The tracking program allows the Town to easily record maintenance activities and monitor compliance with the inspection requirements of their local ordinance for 9700 systems. Service providers enter data into the system at the time an inspection or pumping event occurs, minimizing the work load on Town employees. The Town can also easily generate reminder notices for mailing to homeowners. The cost to the Town is approximately \$1000 per year but officials say the cost is well worth the benefit. Timothy Cranston, North Kingstown Water Quality Specialist, says, “We used to use a different tracking system, which was cumbersome and not at all user friendly and typically had compliance rates of around 28%. With Carmody in place for three years now, we are seeing compliance at 90%, which is pretty impressive when you are talking about that many systems.”

Rhode Island Cesspool Act of 2007: Implementation Phase

The RI Cesspool Act of 2007 (RIGL 23-19.15) calls for the replacement of cesspools that are within 200 feet of coastal waterbodies, within 200 feet of drinking water reservoirs, and within 200 feet of public wells. During FY 2011, the R.I. General Assembly amended the Cesspool Act (the Act) in two significant ways. The first was to extend the compliance deadline for cesspool replacement by one year. Cesspools subject to the Act must still be inspected by the end of 2011 but the replacement date is now January 1, 2014. (See Figure 4 for an example of a cesspool that will be captured by this law.) The second change to the Act extended the timeline and clarified the process for requesting a time extension for those properties in areas where sewer lines are either under construction or planned. Discussions with town officials in some affected areas revealed that the process of planning, funding, and building sewer extensions would take longer than the original Cesspool Act extensions would cover. The revised Act language allows property owners who meet specific criteria to wait for sewers to become available before abandoning their cesspools. The goal remains to avoid forcing property owners to incur a large expense by installing an onsite wastewater treatment system only to subsequently be required to connect to a newly constructed sewer line.

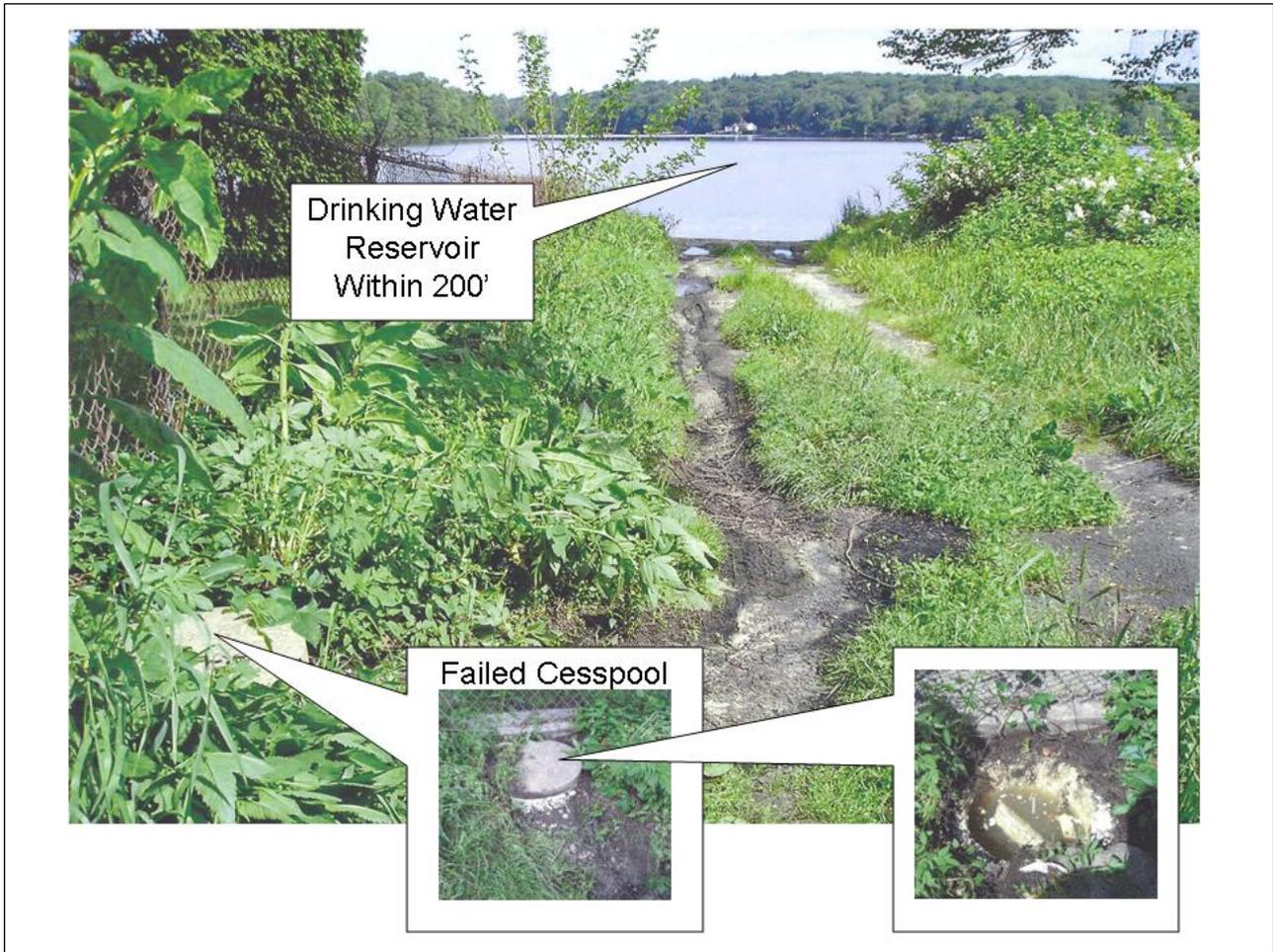


Figure 4. Failed Cesspool Near a Drinking Water Reservoir.

DEM has completed the first phase of a notification process for property owners potentially subject to the Act. In order to keep the process manageable, nine separate mailings were done, spaced three to four weeks apart. Working from a list of properties identified through a combination of GIS analysis and permit record research, the Department issued 2,647 initial notification letters (see Table 1 for number of mailings for each community). Letters include an explanation of the Act, instructions for the steps each property owner must take to show compliance with the Act, and guidance on how to obtain more information.

DEM's analysis to determine subject properties included several assumptions that could result in some property owners receiving a notification even though their property is not subject to the Act. For example, the actual location of each cesspool is unknown so the Department assumed that a cesspool would be located within 50 feet of the building it serves even if on some lots this 50 foot radius extended beyond the 200 foot zones specified in the Act. This assumption could result in an overestimation of subject properties and some property owners being notified even though they are not subject to the Act. A property owner in this situation can demonstrate compliance with the Act by submitting evidence to DEM showing the cesspool on their property is more than 200 feet from the feature of concern.

The notices issued by DEM have generated new interest among some property owners in gaining access to sewer service. The towns of Narragansett, Westerly, East Greenwich, East Providence, and Warwick each have regions of dense development close to coastal features and subject to the Act but not served by municipal sewers. Each of these towns has either initiated or accelerated plans to extend sewer service due in part to the R.I. Cesspool Act. Many of the areas under discussion are less suitable for the use of onsite systems due to high water tables, poor soils, small lot sizes, etc. These same factors tend to increase the cost of onsite systems, potentially making a more centralized wastewater treatment strategy the more cost effective and environmentally protective solution. The Department has been working with each of these towns as they develop their plans so the goals of the Cesspool Act can be met as efficiently as possible.

Other NPS Program Activities

Blackstone River Decentralized Wastewater Demonstration Project: DEM's Nonpoint and Onsite Programs have taken responsibility for the RI portion of this EPA funded project for a \$621,000 grant to the Town of Glocester to address water quality concerns in the village of Chepachet. Chepachet has had chronic septic system failures for many years that are a threat to the Chepachet River and the groundwater that is the source for all of the drinking water in the village. In addition, untreated stormwater discharges to the Chepachet River occur in several locations and drainage problems have led to localized flooding. The Town has chosen to narrow its focus to give priority to the stormwater issues in the village. The project has provided opportunities to coordinate with the RI Department of Transportation (currently designing an upgraded drainage system for State Route 44), the DEM Office of Waste Management, and the Rhode Island Historical Preservation Commission. The result of this coordination will be the construction of a wet vegetated treatment system near the River for stormwater management, a newly created town park on a remediated brownfields site, and a conceptual design for a wastewater collection system which will be completed when further funding can be obtained.

State Integrated Planning Initiative: DEM NPS staff participated in the workgroup to integrate the primary elements of several statewide water quality related plans (including the RI Nonpoint Source Pollution Management Plan) into one "Integrated Plan" to be incorporated into the State Guide Plan administered by the RI Department of Administration. This planning effort is being led by the staff of the Narragansett Bay Estuary Program, and it is designed to fulfill the planning mandates of the Narragansett Bay Estuary Program and the RI Bays, Rivers, and Watersheds Coordination Team.

Turf Fertilizer Initiative: NPS staff is participating in this regional initiative generated by the New England Governor's Committee on the Environment to work with industry stakeholders on voluntary guidance on turf fertilizer to reduce the impacts of nitrogen and phosphorus on water resources. Topics to be addressed include nitrogen and phosphorus content, application rates and setbacks, outreach and marketing, and labeling requirements.

New England Interstate Water Pollution Control Commission (NEIWPC): DEM staff participates in the NEIWPC Workgroups described below with staff from EPA Region 1, the five other New England states and New York. Each workgroup meets or holds conference calls two to three times per year.

The Nonpoint Source Pollution Workgroup provides a forum to share ideas on NPS issues and Clean Water Act Section 319 grants. Staff attended the NEIWPC Annual Regional NPS conference held this year in Saratoga Springs, NY in May.

The Pharmaceutical and Personal Care Product Workgroup addresses the concerns about this class of emerging contaminants in groundwater and surface water. Staff attended the 2011 Northeast Water Science Forum “Science to Inform Pharmaceutical and Personal Care Product Management” in Portland in April.

The Onsite Wastewater Workgroup is a forum for information exchange among the state regulators working with onsite wastewater issues.

Groundwater/Source Water Workgroup addresses the numerous and varied issues in the protection of groundwater and surface water used for drinking water supply from geothermal concerns to pesticides.

TMDL Workgroup meetings to address issues in developing and implementing water quality restoration studies. This also included joint TMDL/Stormwater Workgroup meetings.

GRTS: DEM NPS staff attended the national training session on the EPA required Grant Reporting and Tracking System (GRTS) in Atlanta in November 2010.

**Attachment 1. Section 319 Nonpoint Grants Managed During FY 2011
(Status of September 30, 2011)**

Grantee	Grant Project Title	Affected Watershed	Grant Amount or Final Payment	Status (As of 9/30/2011)
Barrington	Allin's Cove Paper Street and Bay Spring Avenue Design and Construction	Providence River	\$143,390 (\$79,928 BWRP)	Work Complete— Grant Not Yet Closed
Barrington	Allin's Cove – Feasibility and Design for 3 rd Street Outfall Catchment	Providence River	\$10,100	Work Complete— Grant Not Yet Closed
Bristol	Town Beach Stormwater Pipe Retrofit Design and Permitting	Narragansett Bay	\$36,620	Closed
Bristol	Town Beach Stormwater Pipe Retrofit Construction	Narragansett Bay	\$158,000	Active
Burrillville	Stillwater Mill Porous Pavement Lot	Clear River	\$66,030	Closed
Coventry	Sandy Bottom Road Wetland Restoration	Pawtuxet River	\$60,000	Active
Coventry	East Shore Drive Stormwater Improvements	Tiogue Lake	\$39,000	Active
East Greenwich	Hill and Harbor Stormwater Infiltration	Greenwich Bay	\$79,000 (\$67,000 BWRP)	Work Complete— Grant Not Yet Closed
East Greenwich	Sun Valley Stormwater Infiltration	Hunt River	\$147,000 (\$173,000 BWRP)	Closed
East Providence	Bold Point Park Buffer Restoration Project	Seekonk and Providence Rivers	\$20,000	Active
Foster	Municipal Salt Storage Structure	Scituate Reservoir	\$51,203	Closed
Jamestown	Municipal Salt Storage Structure	Local groundwater	\$120,000	Closed
Lincoln	Lincoln Municipal Rain Gardens	Blackstone River	\$13,340	Cancelled
Middletown	Slate Hill Farm Stormwater Retrofit	Bailey's Brook	\$33,598	Closed
Middletown	Gaudet Middle School Stormwater Retrofit	Bailey's Brook	\$41,811	Work Complete— Grant Not Yet Closed
Middletown	Maidford River Bank Stabilization	Maidford River	\$118,000	Active
Middletown	Newport Avenue Bioretention Stormwater Retrofit Design and Implementation	Easton's Bay	\$42,696	Active
Middletown	Feasibility Study for the Attenuation of Phosphorus in Stormwater in North Easton Pond	North Easton Pond	\$31,086	Active

Narragansett	Narrow River Stormwater Abatement at Pettaquamscutt and Edgewater	Narrow River	\$450,456 (\$660,519 BWRP)	Closed
North Kingstown	Sawmill Pond Watershed Restoration Project	Hunt River	\$200,000	Active
North Smithfield	Branch Village Constructed Wetland	Branch River	\$174,810	Active
Providence Water Supply Board	Rockland Pipe Stream Riparian Restoration	Scituate Reservoir	\$15,000	Active
RIDEM Planning and Development	Burlingame Picnic Area Cesspool Replacement	Watchaug Pond	\$100,000	Closed
RIDEM Office of Water Resources	RIDEM Facility UIC Closures	Statewide	\$66,000	Active
RI DOT	Construction of Stormwater BMP at Two Mile Corner, Middletown	Bailey Brook/N Easton Pond	\$265,000	Active
Smithfield	Stillwater Reservoir Pollution Abatement	Woonasquatucket River	\$30,000 (\$153,700 BWRP)	Work Complete— Grant Not Yet Closed
Warren	Onsite Wastewater Management Implementation	Touisset Point groundwater	\$13,200	Active
Warren	Warren Town Beach Stormwater Treatment Feasibility and Design	Warren River	\$19,615	Closed
Warren	Municipal Salt Storage Structure	Kickemuit River	\$100,000	Work Complete— Grant Not Yet Closed
Warwick	Brush Neck Cove Stormwater Infiltration	Greenwich Bay (Brush Neck Cove)	\$30,000	Active
Warwick	Tuscatucket Brook Stormwater Abatement Feasibility Study	Greenwich Bay (Tuscatucket Brook/Brush Neck Cove)	\$58,000	Work Complete— Grant Not Yet Closed
Warwick	Fire Station No.5 Connection to Sewer	Greenwich Bay (Apponaug Cove)	\$25,711	Closed
West Warwick	Former West Warwick Town Landfill Closure	Pawtuxet River	\$40,000	Active
Westerly	Municipal Salt Storage Structure	Pawcatuck River	\$174,000	Work Complete— Grant Not Yet Closed
Westerly	Bradford Streetscape Subsurface Gravel Wetland Design	Pawcatuck River	\$60,000	Active

NOTES:

-- The “grant amount” for the projects is not the total cost of the project. Grant recipients are required to provide a minimum match in funds or in-kind services. This required minimum match ranges from 10% to

40% (depending on the type of project) of the grant project budget (grant plus match). Completion of the recipient's desired project occasionally requires more than the minimum match.

-- Some projects are funded jointly by the federal Clean Water Act and the state Bay and Watershed Restoration Bond Fund (BWRF).

-- Status:

Active: Work on grant development and/or grant implementation proceeding.

Closed: All work on grant has been completed, including final payment and reporting.

Work Complete – Grant Not Yet Closed: Work is done on primary deliverables, but payment and final reporting have not been completed. Therefore, the grant remains active.

Cancelled: Project cancelled with no payments made.

Attachment 2

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES

Summary of Rhode Island Municipal Onsite Wastewater Programs

September 2011

The R.I. Department of Environmental Management (DEM) has established minimum standards for onsite wastewater treatment systems throughout the state- *Rules Establishing Minimum Standards Relating to Location, Design, Construction and Maintenance of Onsite Wastewater Treatment Systems*. The rules are available online at: <http://www.dem.ri.gov/pubs/regs/regs/water/owts11.pdf>. DEM also encourages municipalities to establish local programs to meet the onsite wastewater needs of each town. Cities and towns have authority to set local standards for septic systems that are more stringent than state standards. Where established, these standards are part of municipal septic system management programs. Most of these programs have been created with the assistance of State Bond funds or Federal Nonpoint Source funds distributed through DEM grants (with the exception of New Shoreham, where an EPA grant was used). Towns use these funds to develop an onsite wastewater management plan (OWMP) designed to meet local needs. An OWMP describes the elements of the municipal management program for septic systems. Program elements may include, for example, passing an ordinance requiring system inspections, enhancing homeowner education, or specifying more stringent treatment requirements in environmentally sensitive areas. Once approved by DEM, an OWMP makes a town eligible to apply to the Community Septic System Loan Program (CSSLP). CSSLP has been the primary incentive for towns to develop an OWMP. CSSLP funds come from the State Revolving Fund and are administered by the R.I. Housing Agency. Money is used by participating towns to provide low interest loans to homeowners to cover the costs associated with septic system repairs and upgrades.

This document provides a brief summary of local onsite wastewater management in Rhode Island. Eighteen towns have an approved OWMP; eleven participate in the CSSLP. Four towns have a draft OWMP. The following cities and towns are primarily served by sewers and have not initiated local efforts to manage septic systems: Barrington, Central Falls, East Providence, Lincoln, Newport, North Providence, Pawtucket, Providence, West Warwick, and Woonsocket.

Bristol: Much of the Town of Bristol is served by municipal sewers, but some onsite systems are in use. Bristol has an approved OWMP and is participating in the CSSLP. The plan calls for voluntary system inspections and homeowner education.

Burrillville: Burrillville is primarily served by onsite wastewater systems but there is no municipal oversight program for these systems.

Charlestown: Charlestown has an approved OWMP and has a municipal onsite wastewater management program in place. The town charter includes a dedicated staff person to run the onsite wastewater program. The town has a wastewater management ordinance requiring periodic inspection of onsite systems. The town also maintains a web-based septic system inventory and tracking program, and is in the midst of a town-wide cesspool phase-out program. Charlestown also participates in the CSSLP.

Coventry: Coventry has an approved OWMP and participates in the CSSLP. The approved OWMP proposes phased implementation of a management program based on improving homeowner awareness, creating a septic system inventory, and promoting voluntary system inspections. The management program focuses on making financial assistance available to repair or replace failed systems and cesspools. Through CSSLP, loans of up to \$10,000 are available to residents who meet the town's eligibility criteria.

Cranston: The City of Cranston is primarily served by sewers, but a small number of onsite systems are in use. Cranston has a draft OWMP but current municipal management activities are limited and work on the plan has been suspended.

Cumberland: Cumberland does not have an active municipal onsite wastewater management program at this time.

East Greenwich: East Greenwich has a municipal sewer system for the area east of Route 2, serving approximately two-thirds of the town's population. The rest of the town is served by onsite systems. The town does not have an approved OWMP.

Exeter: Exeter has an approved OWMP. The plan utilizes education and outreach efforts to encourage voluntary system inspections.

Foster: Foster has an approved OWMP. The plan utilizes education and outreach efforts to encourage voluntary system inspections. The town also utilizes a web-based inventory program.

Glocester: Glocester has an approved OWMP and has implemented a limited municipal onsite wastewater management program. The town participates in the CSSLP. The management program encourages voluntary system inspections. The town also requires local review and a special-use permit for proposed onsite systems located within 150 feet of a waterbody.

Hopkinton: Hopkinton has an approved OWMP. The plan utilizes education and outreach efforts to encourage voluntary system inspections.

Jamestown: Jamestown has an approved OWMP and has a municipal onsite wastewater management program in place. The town participates in the CSSLP. Jamestown has an onsite wastewater management ordinance requiring septic system inspections at regular intervals. The town also has a High Groundwater Overlay Zone specifying additional septic system siting and treatment requirements. Jamestown uses a web-based inventory and tracking computer program to monitor septic system maintenance and track performance.

Johnston: Johnston has an approved OWMP and is participating in the CSSLP.

Little Compton: Little Compton has a draft OWMP but there is currently no onsite management program in place.

Middletown: Middletown currently has no municipal onsite wastewater management program.

Narragansett: Narragansett has an approved OWMP and participates in the CSSLP. The town does not have an onsite wastewater management ordinance, but the zoning ordinance sets more stringent standards than the state regulations for septic system siting. The town utilities ordinance requires septic system pumping at least every 4 years, with records submitted to the town.

New Shoreham: The Town of New Shoreham has an approved OWMP and has a municipal onsite wastewater management program in place. The town has an onsite wastewater management ordinance requiring system inspections and maintenance. A town-wide cesspool phase-out program is ongoing. New Shoreham's zoning ordinance specifies treatment standards based on location and soil conditions. The town also participates in the CSSLP.

North Kingstown: The Town of North Kingstown has an approved OWMP and has a municipal onsite wastewater management program in place. The town has an onsite wastewater management ordinance requiring septic system inspection and maintenance at regular intervals. The town participates in the CSSLP with loan funds administered by the Water Department.

North Smithfield: North Smithfield currently has no municipal onsite wastewater management program.

Portsmouth: Portsmouth does not currently have a DEM-approved municipal onsite wastewater management plan. The town is currently evaluating several options, including both expanded sewer service and enhanced management of onsite systems.

Richmond: Richmond has an approved OWMP. The plan utilizes education and outreach efforts to encourage voluntary system inspections.

Scituate: Scituate has an approved OWMP. The plan utilizes education and outreach efforts to encourage voluntary system inspections. The town also utilizes a web-based inventory program.

Smithfield: Smithfield has prepared a draft OWMP that has been reviewed by DEM and returned to the town for revisions.

South Kingstown: South Kingstown has an approved OWMP and has an onsite wastewater management program in place. The town has a wastewater management ordinance requiring inspection of onsite systems. A town-wide cesspool phase-out is nearly complete with all required deadlines having passed. Cesspools discovered via the inspection program had to be upgraded within 5 years of discovery. Cesspools were also required to be upgraded within 12 months of the sale of a property in cases where a property changed hands. The South Kingstown zoning ordinance contains more stringent

setbacks from natural features than the state requirements. South Kingstown uses a web-base inventory and tracking program and participates in the CSSLP.

Tiverton: Tiverton has an approved OWMP and an onsite wastewater management program, including a management ordinance. The town participates in the CSSLP. The ordinance requires septic system inspection and maintenance and mandates the installation of access risers and effluent filters when systems are repaired or upgraded. Tiverton is in the process of implementing a town-wide cesspool phase-out program. Coastal areas in Tiverton are still subject to the R.I. Cesspool Act of 2007 because the Town program specifies later deadlines than the State program. The Town has focused initially on the Stafford Pond watershed and has nearly completed upgrades in this area.

Warren: Although much of the Town of Warren is served by sewers, the Touisset Neck section of town is not. The Town has an approved OWMP for the un-sewered areas of town. The plan proposes an aggressive monitoring and oversight program with a web-based inventory and tracking system.

Warwick: Much of Warwick is sewerred, but a significant number of onsite systems remain. The city is in the process of implementing a mandatory sewer tie-in program. Lots with access to municipal sewers will be required to abandon their onsite system and connect to the sewer line. The city is discussing the development of a management program for those areas where sewer service will not be extended.

West Greenwich: The Town of West Greenwich does not currently have a municipal onsite wastewater management program.

Westerly: The Town of Westerly has a municipal sewer system serving the downtown area, corresponding to approximately half the town's population. The rest of the town is served by onsite systems. Westerly has an approved OWMP which calls for creation of a wastewater management district for areas not currently served by sewers. Within this district, the Town will create a homeowner education and outreach program and create a computerized inventory containing results of voluntary inspections.