

**Municipality/Organization:** Orleans, MA

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**EPA NPDES Permit Number:** MAR041146

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**MaDEP Transmittal Number:** W- 035744

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**Annual Report Number**

**& Reporting Period:** No. 12: May 1, 2014-April 30, 2015

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## NPDES PII Small MS4 General Permit Annual Report

### Part I. General Information

**Contact Person:** Mark Budnick

**Title:** Manager, Public Works

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**Telephone #:** 508-240-3700 ext. 470

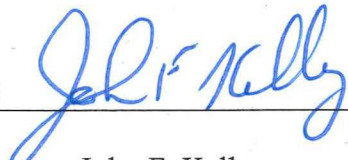
**Email:** mbudnick@town.orleans.ma.us

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#### Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

**Signature:**



**Printed Name:** John F. Kelly

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**Title:** Town Administrator

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**Date:**

4/30/15

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## **Part II. Self-Assessment**

The Town of Orleans has completed the required self-assessment and has determined that our municipality is in compliance with all permit conditions.

### ***Notable Accomplishments/Improvements in Permit Year 12:***

#### ***Water Quality Task Force & Comprehensive Wastewater Management Plan***

The Town of Orleans continues to develop significant ongoing programs to improve marine and fresh water quality and work towards the goals of the Phase II Permit and the final TMDLs for pathogens and nutrients. The efforts of the Marine and Fresh Water Quality Task Force, Orleans Pond Coalition, past and planned BMP construction projects and the development of the December 2010 Comprehensive Wastewater Management Plan (CWMP) have or will result in significant water quality and habitat improvements. The CWMP received final approval from the MA DEP on February 14, 2012. Subsequently, the Town's consultant completed an evaluation of full lifecycle costs for the CWMP and for a small pipe (STE) collection system to provide further support for recommendations in the CWMP. A year-long public engagement process culminated in the approval of a hybrid plan revision of the CWMP. This hybrid plan focuses on non-traditional methods of nitrogen removal with the addition of specific sewer systems in the Downtown and Meetinghouse Pond watershed. The next steps of this process include disposal site evaluation that will be considered for funding at the 2015 Town Meeting. As part of this process, the Town continued to evaluate the needs and benefits of stormwater management to address nutrient loading and other impacts to marine and fresh waters in Town. This information was incorporated into the hybrid planning process, but it is also ongoing, as discussed below under "Stormwater Management Planning". Participation in the UNH Stormwater Center 2015 Workshops is also being considered for select individuals of the Board of Selectmen to help understand stormwater management and treatment approaches.

In addition to the efforts to reduce nitrogen loading from septic sources, the Town of Orleans continues to implement BMPs to reduce the use of fertilizers and pesticides. The Pleasant Bay Alliance developed a fertilizer and pesticide use policy for municipal properties in April 2012. Building upon this effort, the Town developed a Fertilizer Nitrogen Control bylaw that passed at the 2014 Annual Town Meeting. The purpose of the bylaw is to restrict the use of nitrogen based fertilizers throughout Town and it includes the following provisions: no application of nitrogen between October 16 and April 14; no application before or during heavy rain; and no application within 100 feet of Resource Areas. In support of these efforts, the Town maintained a robust public education campaign in Year 12 to inform residents and businesses about the proper use of and alternatives to fertilizers. Orleans is one of three Massachusetts towns (Falmouth and Nantucket) to have such a bylaw.

In Year 10, the Orleans Pond Coalition received a grant for water quality monitoring in the Cedar Pond and Rock Harbor estuarine system. The results of this study increased the awareness and importance of preserving water quality. In Year 11, a Cedar Pond

Management Plan was produced by the UMASS – Dartmouth School of Marine Science and Technology (SMAST) and the Water Quality Task Force and was unanimously approved by the Board of Selectmen. Water quality sampling of receiving coastal waters and fresh ponds in Orleans is done under a QAPP developed by the UMASS School of Marine & Science Technology. In the Cedar Pond Management Plan, SMAST recommended replacing the boards in the old weir to hold back the pond and limit salt water intrusion. In Year 12, the Town began the permitting process for the reinstallation of the water control boards for Cedar Pond. The Rock Harbor estuarine system project was completed in Year 12.

#### Orleans Water Quality Advisory Panel

In Year 12, the Orleans Water Quality Advisory Panel (OWQAP) was convened to guide studies and assessments, define preferred approaches, seek consensus and build widespread community support for a customized, affordable water quality management plan for the Town of Orleans. The panel consists of stakeholder representatives (Orleans Selectmen and representatives of engaged citizen constituencies), and liaisons from key town boards and commissions, organizations, neighboring towns, and regional, state, and federal partners. It is staffed and assisted by Water Resources Associates, Stantec and its consultants, and the Consensus Building Institute (CBI).

The OWQAP has met for twelve half-day meetings since July 2014, all of which were open to public attendance and comment. After examining a broad range of options, the Panel has reached agreement on a set of principles and some key elements of an Amended Water Quality Management Plan (the Plan) and associated Adaptive Management Plan. This Agreement includes and requires successful completion of numerous steps to resolve uncertainties and confirm key elements, such as treatment and disposal site suitability and availability, development of demonstration sites for non-traditional (NT) technologies, and further work to find an equitable distribution of costs necessary to the development of an acceptable and executable engineering plan that adheres to the key elements.

#### Tri-Town Septage Facility

The Tri-town septage facility serves Orleans and two other towns, Brewster and Eastham, and lower Cape for septic waste disposal by providing essential nitrate removal. The agreement between the three towns to use the facility expires on May 30, 2015 and a decision must be made between the three towns to either:

1. Start the final design for single town septic facilities and start bidding services for demolition of facility; or
2. Keep the facility operational through 2016 and extend the permit with some additions and improvements to meet the nitrate removal requirements for the next 20 years.

Option two is being considered by the Town of Orleans and will be discussed and decided upon at the May 2015 Town Meeting.

#### Pleasant Bay Resource Management Plan Update

The Pleasant Bay Resource Management Plan was updated in 2013 and the updated plan was adopted in May 2013. The plan will

further the Town's ongoing effort to work collaboratively with neighboring Towns to promote the natural resource health and public enjoyment of Pleasant Bay. The 2015 update to the plan is currently underway through the Pleasant Bay Alliance.

#### Stormwater Management Planning

The Town and its consultant continued to evaluate program needs based on the draft 2014 Phase II Permit. The Town anticipates using this information and the results from other activities (e.g., CWMP, BMP projects) to develop an appropriate strategy to address the requirements related to TMDLs and impaired water bodies, as part of the Stormwater Management Plan (SWMP) development under the final permit (once issued). The Town continued to work towards development of a comprehensive SWMP to meet future regulatory requirements and water quality goals. The following key stormwater management planning activities occurred in Year 12:

- Detailed mapping of the downtown area was conducted SMC Engineering, Inc. to identify all municipal infrastructure with an emphasis on drainage and other utilities. This effort was coordinated with Greenseal Environmental, Inc. to complete the mapping of drainage systems through the remainder of the Town. The result of these efforts will be a field verified drainage map that identifies each structure, pipe and existing stormwater BMP. The final mapping effort is anticipated to be completed by summer 2015.
- As part of the 208 Plan Update for Cape Cod, the Town participated in a series of meetings to evaluate stormwater management needs and nutrient reduction benefits with the Cape Cod Commission and various consultants.
- The results of the above efforts are being incorporated into a stormwater pollutant load analysis and dynamic planning tool by Amec Foster Wheeler and will provide the following information: baseline pollutant loads; analysis of existing stormwater BMPs and benefits; prioritization of stormwater management basins; and an evaluation of proposed BMPs, benefits and costs. This effort is anticipated to be completed by late summer or early fall 2015. This information will be used as the basis for future capital projects to design and install stormwater BMPs for water quality improvement.
- The above efforts were reviewed on an ongoing basis by the Stormwater Team, which consists of the DPW Director, Highway Manager, Town Planner, Health Agent, Conservation Officer and the Chairperson of the Marine and Freshwater Quality Task Force.

#### Public Education & Involvement Activities

The Town of Orleans conducted the following major events to promote awareness of water resources and engage the community:

- Celebrate Our Waters Event: The Orleans Pond Coalition hosted a "Celebrate Our Waters" event on September 20 and 21, 2014. The celebration was well attended with over 2,000 people and it expanded its geographic footprint to include events in Eastham and in Brewster to highlight "shared waters".
- Arbor Day Celebration: The Orleans Tree Department and the Orleans Conservation Trust teamed with Ameri-Corp Cape Cod honoring Arbor by conducting the Bolands Pond Project:
  - The Town of Orleans property known as Bolands Pond consists of a 4.7 acre kettle pond and 9 acres of upland forest that includes both native and invasive vegetation. Recently, sediment oxygen demand is causing low dissolved oxygen

concentrations and these concentrations are, in turn, causing the release of phosphorus from the sediments, resulting in algal blooms. This has resulted in a decrease in wildlife and less accessibility by the community for recreational activities. Ameri-corps, the Orleans Tree Department, the Orleans Conservation Trust, the Orleans Pond Coalition, and many other community groups aim to restore the pond through the installation of an outdoor classroom and trail system that will aid in the removal of invasive plant species. Nauset Regional Middle School and Orleans Elementary School students are assisting with the cleanup and restoration of the forest and participated in the outdoor classroom program. This event took place from April 13, 2015- April 17, 2015. Additionally, a shed and a patio area for plant sales are being considered for future construction.

#### Barnstable County Coastal Resources Committee

Orleans has a standing member on the Barnstable County Coastal Resources Committee (BCCRC), which meets quarterly. This committee serves as a contact between towns and the County on coastal issues. The committee is the local governance committee for the Cape Cod region of the Massachusetts Bays Program.

#### Stormwater BMP Assessment, Design & Construction

In Year 11, the Town completed designs for stormwater improvements at Pochet Road to address flooding issues and remediate stormwater entering the adjacent resource area. This project went to bid in May 2014 and is currently being constructed. In Year 11, the Town was also in the design phase for stormwater improvements to incorporate bioretention for nutrient removal for a project on Tonset Road. This project was completed in 2014. There were several other stormwater improvements made in permit year 12:

- Monument Road- installed deep sump catch basins to improve the drainage system.
- Brick Hill Road- installation of a stormwater leaching system and other drainage improvements.
- Gibson Road- repair and rehabilitation of an existing drainage system.

As discussed above, the Town is working to develop a comprehensive planning tool to evaluate priority areas for capital projects to design and install stormwater BMPs for water quality improvements. Once this information is available, the Town anticipates proceeding with design and construction of priority BMPs.

#### Stormwater Team

In Permit Year 11, the Town of Orleans established a stormwater committee called the “Stormwater Team.” The Stormwater Team was developed to provide broader insight to evaluate stormwater projects and for the planning and prioritization of stormwater improvements. Members include the DPW Director, Highway Manager, Town Planner, Health Agent, Conservation Officer and the Chairperson of the Marine and Freshwater Quality Task Force. The Stormwater Team met numerous times during Year 12 to review stormwater and water quality issues throughout Town. Various members of the Stormwater Team also participated in specific planning and implementation related to water quality improvement.

### Part III. Summary of Minimum Control Measures

#### 1. Public Education and Outreach

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 12	Planned Activities – Next Permit Term
A.1	Develop and Broadcast Via PA CATV Storm Water Video	Mark Budnick, Public Works Manager	One per year – in conjunction with County Group	The video “After the Storm” is available through an internet media player on the Highway Department’s web page.	Broadcast other pertinent videos on local cable or other medial outlets. Evaluate methods for tracking the number of video views/hits on website. Consider using local cable to broadcast pertinent presentations and Selectmen meetings relating to stormwater management.
Revised			# website hits/views for video	The video was not broadcast on the cable channel in permit year 12. Town is evaluating another video to replace it.	
A.2	Household Hazardous Waste Control	Mark Budnick, Public Works Manager	Annual HHW Collection	Collection days were held in Eastham and Orleans on July 19 <sup>th</sup> and September 20, 2014. A total of 191 Orleans households participated and a total of ~ 24,430 lbs and 4,925 gallons of household hazardous waste were collected from both communities. Event organizers tracked the effectiveness of the various advertisement methods and ~50% of participants heard of the events through the brochure, ~ 22% heard of the event through signs that were posted and the remainder through other methods.	Continue reciprocal HHW collections with the Town of Eastham. Continue tracking resident participation and results. Consider promoting the HHW collection events using additional methods.
Revised			# residents participating	The Orleans Transfer station offers semi-annual paint collections (June 14 <sup>th</sup> and October 11 <sup>th</sup> ) and offers collection of waste gasoline, waste oil and waste antifreeze free to Transfer Station ticket holders. In 2014 the Transfer Station collected and disposed of 825 gallons of waste oil, 220 gallons of waste gasoline and 100 gallons of waste antifreeze.	

<b>BMP ID #</b>	<b>BMP Description</b>	<b>Responsible Dept./Person Name</b>	<b>Measurable Goal(s)</b>	<b>Progress on Goal(s) – Permit Year 12</b>	<b>Planned Activities – Next Permit Term</b>
A.3	Education Flyers	Mark Budnick, Public Works Manager	Distribute 2 per year at Transfer Station	Flyers were replaced with numerous other educational events that were held this permit year.	Consider distributing educational flyers and/or other materials and track materials taken. Continue to consider alternative methods to provide public education and outreach addressing HHW collection and stormwater management concepts.
Revised			# flyers taken by residents	See Notable Accomplishments section.	

### 1a. Additions

<b>BMP ID #</b>	<b>BMP Description</b>	<b>Responsible Dept./Person Name</b>	<b>Measurable Goal(s)</b>	<b>Progress on Goal(s) – Permit Year 12</b>	<b>Planned Activities – Next Permit Term</b>
A.4	Web Page Information	Mark Budnick, Public Works Manager & Peter VanDyck, IT Coordinator	Short Article – one per year	As discussed under BMP A.1, the video “After the Storm” is linked through the Highway Department’s webpage. The webpage also links to EPA’s NPDES Stormwater Program web page and the Town’s stormwater bylaws.	Continue to maintain existing web pages related to stormwater and water quality. Evaluate additional web page links and begin tracking the number of hits. Consider short articles or topics that can be posted annually on web pages.
Revised			# website hits	<p>Agendas, meeting minutes, and additional information are posted on a webpage for the Marine and Fresh Water Quality Task Force. The Town also maintains a webpage for reports, meeting minutes and other documents related to the CWMP.</p> <p>The Orleans Pond Coalition maintained and updated its website to continue to promote general awareness of water bodies in Orleans. The website integrates the Town’s efforts to protect and improve water quality through the implementation of the CWMP, fertilizer management programs and “Mutt Mitts” program for dog waste. Numerous new links were added to the website this permit year.</p>	Evaluate methods to integrate stormwater program information and educational opportunities between the Town web pages and the website maintained by the Orleans Pond Coalition

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A.5	Other Public Education In Year 10	Mark Budnick, Public Works Manager		Copies of “The Orleans Blue Pages” water quality protection booklet (50+ pages) developed by the Orleans Pond Coalition were made available at no cost for residents at Town Hall.	Continue existing public awareness activities and evaluate methods to track materials taken, posters, displays and audience (number) reached.
Revised	Other Public Education Activities in Year 12		# copies of “Orleans Blue Pages” taken by residents  # posters displayed & handouts		
A.6	Storm Drain Stenciling	Mark Budnick, Public Works Manager	Stencil storm drains leading to critical priority outfalls.	No storm drain stenciling occurred during the permit term.	Continue storm drain stenciling activities at highly visible areas and areas that drain directly to priority outfalls and waterways. More actively solicit volunteers through the Marine and Fresh Water Quality Task Force or with schools.
Revised		Marine & Fresh Water Quality Task Force	# stenciled drains per year		



## 2. Public Involvement and Participation

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 12	Planned Activities – Next Permit Term
B.1	Water Quality Monitoring Program	Marine & Fresh Water Quality Task Force	Ongoing	In Permit Year 12, the Marine & Fresh Water Quality Task Force performed water quality monitoring activities. Five new locations were added by the Pleasant Bay Alliance. Summer sampling of embayments was also performed and included 23 locations on Cape Cod Bay, Nauset Estuary, and Orleans' portion of Pleasant Bay. 53 volunteers collected 585 samples on five sampling days. Additional samples were taken from the Atlantic Ocean off Nauset Spit and 17 freshwater ponds in spring and late summer of 2014.	Evaluate priorities and continue monitoring water quality and tracking which program results were most effective. Use monitoring results to develop remediation plans for high priority areas. Continue to support Task Force and hold monthly meetings.
Revised		Town Administrator & Board of Selectmen	# samples collected, water bodies assessed each year & water quality improvements	<p>The Marine &amp; Fresh Water Quality Task Force met once per month to review monitoring activities and results related to priority water bodies and potential improvement projects.</p> <p>The following areas are considered high priority areas in town: Cedar Pond, Meetinghouse Pond, Meetinghouse River, Town Cove, Bolands Pond, Ellis Pond, and inland ponds and estuaries. No additional action was taken this Permit Year.</p>	

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B.2	Estuaries Program	Director of Planning and Development	Ongoing	<p>The Town's Comprehensive Wastewater Management Plan (CWMP) received final approval from the MA DEP on February 14, 2012. The Town's consultant completed an analysis of full lifecycle costs for the CWMP and for a small pipe (STE) collection system to support the recommendations of the CWMP. A year-long public engagement process culminated in the approval of a hybrid plan revision of the CWMP. This hybrid plan focuses on non-traditional methods of nitrogen removal with the addition of specific sewer systems in the Downtown and Meetinghouse Pond watershed. The next steps of this process include disposal site evaluation that will be considered for funding at the 2015 Town Meeting. As part of this process, the Town continued to evaluate the needs and benefits of stormwater management to address nutrient loading and other impacts to marine and fresh waters in Town.</p> <p>In Year 12, the Orleans Water Quality Advisory Panel (OWQAP) was convened to guide studies and assessments, define preferred approaches, seek consensus and build widespread community support for a customized, affordable water quality management plan for the Town of Orleans. Additional information is discussed in Part II under Notable Accomplishments.</p> <p>The Board of Selectmen is also seeking additional funding for 2015 at the May 2015 Town Meeting.</p>	Continue to promote the CWMP and implement recommendations and strategies. Continue to incorporate elements of the CWMP into the SWMP to meet the new permit requirements, as appropriate.
Revised	Estuaries Program & Comprehensive Wastewater Management Plan		<p>Regulatory review of CWMP.</p> <p>Assessment of potential cost-saving alternatives.</p>		

## 2a. Additions

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 12	Planned Activities – Next Permit Term
B.3	Storm Drain Stenciling	Mark Budnick, Public Works Manager	Stencil storm drains in downtown area and other at systems leading to critical priority outfalls.	Refer to BMP A.6.	Refer to BMP A.6.
Revised		Volunteers	# stenciled drains per year & # volunteers		
B.4	Outfall Monitoring	Mark Budnick, Public Works Manager	Perform dry weather outfall monitoring of all outfalls that were initially observed to have flow during the GIS locating.	Highway Department staff received training on data collection and illicit discharge detection during catch basin cleaning activities. Greenseal Environmental noted dry weather flow during mapping efforts in permit year 12 and documented the locations. They made note of any suspect indicators of potential illicit discharges. The Town began planning to conduct follow up inspections to evaluate the sources of dry weather flows.	Incorporate inspection results into the prioritization scheme for future improvement projects.
Revised	Volunteer Outfall Monitoring Program	Marine & Fresh Water Quality Task Force	# volunteer participants	In Year 10, the Orleans Pond Coalition received a grant for water quality monitoring the Cedar Pond and Rock Harbor estuarine system. The results of this study increased the awareness and importance of preserving water quality. In Year 11, a Cedar Pond Management Plan was produced by SMAST and the Water Quality Task Force and was unanimously approved by the Board of Selectmen. In Year 12, the Town began the permitting process for the reinstallation of the water control boards for Cedar Pond. The Rock Harbor estuarine system project was completed.	Continue to support the efforts of the Marine & Fresh Water Quality Task Force and coordinate efforts with the Orleans Pond Coalition volunteers.

<b>BMP ID #</b>	<b>BMP Description</b>	<b>Responsible Dept./Person Name</b>	<b>Measurable Goal(s)</b>	<b>Progress on Goal(s) – Permit Year 12</b>	<b>Planned Activities – Next Permit Term</b>
B.5	Maintain Animal Waste Collection Bags in Key Areas of Concern	Orleans Pond Coalition		“Mutt Mitts” animal waste collection bags were maintained by volunteers from the Orleans Pond Coalition at key areas of concern for residents to properly dispose of waste. Town Departments assisted with proper waste disposal. Approximately 47,000 bags were used across all of the collection stations.	Continue maintenance of “Mutt Mitts” program and ensure proper disposal of wastes. Continue to track the number of bags taken and evaluate if high occurrences of improper disposal warrant a targeted education campaign.
Revised		Mark Budnick, Public Works Manager			
B.6	Water Day Celebration	Orleans Pond Coalition	List of activities & participants	The Orleans Pond Coalition hosted a “Celebrate Our Waters” event on September 19, 20 and 21, 2014. The event was well attended with over 2,000 people. The celebration expanded to include events in Eastham and Brewster.	Organize another “Celebrate Our Waters” event with the Orleans Pond Coalition. Incorporate stormwater education topics and activities into the event.
Revised					
B.7	Operation Orleans	Orleans Tree Dept. & Conservation Trust	List of activities & participants	The Orleans Tree Department and the Orleans Conservation Trust teamed with Ameri-Corp Cape Cod honoring Arbor Day by implementing the Bolands Pond Project. Refer to “Notable Accomplishments” for further description of the event.	
Revised	Orleans Green Week				

### 3. Illicit Discharge Detection and Elimination

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 12	Planned Activities – Next Permit Term
C.1	Storm Water System Mapping and Database Development	Mark Budnick, Public Works Manager	Comprehensive town-wide survey by year 2 – as funding allows	In Permit Year 10, the Town hired a consultant to field verify the drainage system and update the GIS database. This effort continued into Year 12 with an additional consultant and the mapping effort included outfall screening for illicit discharges (see BMP C.3 for screening results). The storm drain mapping project is anticipated to be completed by summer 2015.	Continue to update the drainage system base map as needed.
Revised					
C.2	Review Existing By-Laws	Director of Planning and Development	Review existing by-laws and adopt storm water ordinance FY06	As discussed in previous reports, a Floor Drain Regulation went into effect on July 1, 2010. The Highway Department drafted an Illicit Discharge Bylaw that was passed and adopted at the May 2013 Town Meeting. The Bylaw addresses all illicit discharges to the MS4 and water bodies in Orleans.	Monitor and enforce the Illicit Discharge Bylaw and local requirements related to floor drains, dumping, and pet waste control.
Revised					
C.3	Identify and Document Illicit Connections	Mark Budnick, Public Works Manager	Review C.1 results, finalize database by Year 4	<p>The Highway Department inspects all catch basins during cleaning operations and completes a form to document the condition and any potential illicit discharges.</p> <p>All known outfalls were observed for flow, condition and were photographed as part of the Towns Preliminary Stormwater Assessment in 2014. Greenseal Environmental conducted additional investigations and mapping of the drainage system. They also noted dry-weather flow for these outfalls and the Town began planning to conduct follow up inspections to evaluate the source of dry weather flows.</p> <p>The Town investigated two non-stormwater discharges and one potential illicit discharge was identified. This area is under investigation and will be addressed.</p>	<p>Continue to inspect outfalls with previous dry weather flows to verify that an illicit discharge is not present.</p> <p>Continue to review mapping results with catch basin, pipe cleaning and inspection information. Incorporate existing procedures into future IDDE procedures and the O&amp;M Plan under Control Measure 6.</p>
Revised	Identify & Remove Illicit Connections & Discharges		# discharges identified, removed within 1 year of discovery		

### 3a. Additions

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 12	Planned Activities – Next Permit Term
C.4	Comprehensive Wastewater Management Plan	Director of Planning and Development	Progress towards a final CWMP	<p>In Year 12, the Orleans Water Quality Advisory Panel (OWQAP) was convened to guide studies and assessments, define preferred approaches, seek consensus and build widespread community support for a customized, affordable water quality management plan for the Town of Orleans. The outcome of this effort will be a revised water quality management plan, appended to the CWMP. Additional information is discussed in Part II under Notable Accomplishments.</p> <p>The Town anticipates incorporating the results of these efforts into the SWMP update based on new permit requirements.</p>	Continue to monitor how elements from the CWMP or other Plans and the SWMP overlap to identify any practices that could satisfy requirements of both.
Revised					
C.5	Public Education for Illicit Discharges	Mark Budnick, Public Works Manager		As outlined in BMPs A.1 through A.6 and B.5, various entities have incorporated information regarding illicit discharges into existing public education and public involvement activities.	Continue to incorporate illicit discharge information into existing public education and involvement activities and evaluate results.
Revised					

#### 4. Construction Site Stormwater Runoff Control

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 12	Planned Activities – Next Permit Term
D.1	Review Existing By-Laws	Director of Planning and Development	Review existing by-laws and adopt construction ordinance	As discussed in the Year 6 Annual Report, the Town adopted the Drainage and Erosion and Sediment control bylaw at Town meeting in May 2008.	Continue to enforce bylaws and document actions.
Revised				The Highway Department continued to inspect sites throughout Town for potential erosion issues and 6 issues were identified. The Highway Department notified the landowners through emails and personal visits to evaluate the erosion problems. The problems were all corrected shortly after each notification by the Highway Department.	
D.2	Propose amendments and articles at Town Meeting	Director of Planning and Development	Spring 06	As discussed in the Year 6 Annual Report, the Town adopted the Drainage and Erosion and Sediment control bylaw at Town meeting in May 2008. No amendments were deemed necessary at this time.	Continue to evaluate effectiveness of bylaws and amend if necessary.
Revised			Ongoing		

#### 4a. Additions

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 12	Planned Activities – Next Permit Term
D.3	Establish a Procedure for Receipt of Information by Public	Mark Budnick, Public Works Manager	# calls received & record of corrective actions	No calls were received this year.	Continue to respond to calls regarding construction site erosion and sediment issues. Improve recordkeeping and documenting calls and actions by all departments by standardizing forms and improved sharing of information.
Revised					

## 5. Post-Construction Stormwater Management in New Development and Redevelopment

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 12	Planned Activities – Next Permit Term
E.1	Review Existing By-Laws	George Meservey, Director of Planning and Development	Review existing by-laws and adopt Runoff Control Ordinance	As discussed in the Year 6 Annual Report, the Town adopted the Drainage and Erosion and Sediment control bylaw at Town meeting in May 2008.	Continue to enforce bylaw and review plans through Site Plan Review committee.
Revised				Any plans for significant development are reviewed for compliance through the Site Plan Review committee.	
E.2	Propose amendments and articles at Town Meeting	George Meservey, Director of Planning and Development		Refer to BMP E.1.  No amendments were deemed necessary at this time.	Continue to evaluate effectiveness of bylaws and amend if necessary.
Revised			Ongoing		

### 5a. Additions (none at this time)



## 6. Pollution Prevention and Good Housekeeping in Municipal Operations

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 12	Planned Activities – Next Permit Term
F.1	Street Sweeping	Mark Budnick, Public Works Manager	Sweep as part of annual winter cleanup and as needed	There are 54 miles of street in the Town and all streets were swept at least twice during the permit year. Additional streets are swept 2-3 times during the year including known areas of high sediment/sand accumulation, downtown areas, and paved areas that discharge to environmentally sensitive areas.  In 2013, the Town purchased a new generative air sweeper to improve street sweeping operations to improve water quality.  Approximately 675 tons of street sweepings were collected during the year and reused in accordance with the existing BUD.	Continue annual street sweeping program and focus additional sweeping efforts on needed and environmentally sensitive areas.
Revised					
F.2	Catch Basin Cleaning	Mark Budnick, Public Works Manager	Clean all basins in town on yearly rotating schedule	~450 basins were cleaned and all 900 were inspected once. Approximately 104 tons of catch basin cleanings were collected during the year. In addition, all existing stormwater BMPs were inspected and if necessary cleaned of sediment.  Approximately 1,000 feet of storm drain pipes were cleaned. None of these were camera inspected due to the fact that many were culverts that were able to be visually inspected. Materials were reused in accordance with the existing BUD.	Continue annual catch basin cleaning Program. Consider evaluating drainage areas to prioritize cleaning efforts as appropriate.
Revised					

<b>BMP ID #</b>	<b>BMP Description</b>	<b>Responsible Dept./Person Name</b>	<b>Measurable Goal(s)</b>	<b>Progress on Goal(s) – Permit Year 12</b>	<b>Planned Activities – Next Permit Term</b>
F.3	Develop Drainage System Improvement Plan	Mark Budnick, Public Works Manager	Prepare Capital Plan Article for FY10	The Ongoing Capital Plan includes an allotment of \$161,520 for water quality related drainage improvements. A construction plan for water quality improvements projects is updated annually based on the results and input from the Marine and Fresh Water Quality Task Force.  See “Notable Accomplishments” for a more detailed description of activities and projects related to this BMP.	Continue funding the drainage system components of the Capital Plan to remediate outfalls and construct stormwater BMPs.  Consider adding improvements to the Capital Plan that specifically address the Town’s TMDL responsibilities.
Revised			Update Capital Plan Annually		
F.4	Propose Amendments and Articles at Town Meeting	Mark Budnick, Public Works Manager	Spring 06	Consistent with the efforts under BMP F.3, The Town appropriated \$161,520 for the design and construction of stormwater BMPs throughout the year. This funding is now available for stormwater planning efforts to evaluate the most appropriate locations for stormwater remediation projects. The Town focused on evaluating priority stormwater remediation projects, namely the Pochet and Tonset stormwater projects during Permit Year 12.	Continue to fund water quality improvement planning and construction projects annually.
Revised			Prepare Capital Plan Articles Annually		

#### 6a. Additions

<b>BMP ID #</b>	<b>BMP Description</b>	<b>Responsible Dept./Person Name</b>	<b>Measurable Goal(s)</b>	<b>Progress on Goal(s) – Permit Year 12</b>	<b>Planned Activities – Next Permit Term</b>
F.5	Maintain Animal Waste Collection Bags in Key Areas of Concern	Orleans Pond Coalition		“Mutt Mitts” animal waste collection bags were maintained by volunteers from the Orleans Pond Coalition at key areas of concern for residents to properly dispose of waste. Town Departments assisted with proper waste disposal and more than 47,000 bags were used across all of the collection stations. The Orleans Pond Coalition maintains dispensers at 51 locations.	Continue maintenance of “Mutt Mitts” program and ensure proper disposal of wastes. Continue to track the number of bags taken and evaluate if high occurrences of improper disposal warrant a targeted education campaign.
Revised					

<b>BMP ID #</b>	<b>BMP Description</b>	<b>Responsible Dept./Person Name</b>	<b>Measurable Goal(s)</b>	<b>Progress on Goal(s) – Permit Year 12</b>	<b>Planned Activities – Next Permit Term</b>
F.6	Nutrient Loading Reductions	Mark Budnick Public Works Manager	Implement Organic Based Land Management Program	As discussed under “Notable Accomplishments”, the Pleasant Bay Alliance developed a fertilizer and pesticide use policy for municipal properties in April 2012. Building upon this effort, the Town developed a Fertilizer Nitrogen Control bylaw that passed at the 2014 Annual Town Meeting. The purpose of the bylaw is to restrict the use of nitrogen based fertilizers throughout Town.  The Organic Based Land Management Program continued for Town properties, consistent with NOFA guidelines. The program focuses on reducing nutrient loads through the use of cultural land management practices and organic enhancements for healthy turf and native vegetation. Compost from the Transfer Station was used for turf enhancement.  The Town also only uses organic fertilizer. The organic fertilizer is made from compost teas and comes in kits that contain organic components rich in microorganisms highly beneficial to plant growth and health. The fertilizer is planned to be applied in spring, summer and fall depending on staffing availability. Town staff received training for implementation of this program.  Modified mowing practices continued at the Town Cove conservation viewing areas to reduce the need for rigorous turf management. The Town has used limited organic-based pesticides for the last 7 years.	Adopt and enforce the Fertilizer Nitrogen Control bylaw.  Continue organic based land management program to minimize nutrient loading. Evaluate methods to estimate the quantity of nutrients reduced through this program.  Continue turf and pesticide management practices at Town Cove and other locations to reduce the need for chemical applications.  Continue implementation of the fertilizer and pesticide use policy for municipal properties.
Revised					

<b>BMP ID #</b>	<b>BMP Description</b>	<b>Responsible Dept./Person Name</b>	<b>Measurable Goal(s)</b>	<b>Progress on Goal(s) – Permit Year 12</b>	<b>Planned Activities – Next Permit Term</b>
F.7	Trash Management	Mark Budnick, Public Works Manager & Dawson Farber, Harbormaster and Natural Resources Manager	Maintain a proactive trash collection program	Town Departments maintained the active Trash collection program at appropriate town properties with waste receptacles.  A dumpster is also maintained by the Harbor Master for fishing fleet waste at the Town harbor. This dumpster was put out during the fishing season to encourage proper waste disposal. The program provides a means of waste disposal at public areas to discourage littering.  The pump-out for boat sanitary waste in the harbor was repaired.	Continue to service litter receptacles at appropriate locations around the Town.  Evaluate whether a “carry in/carry out” policy would reduce improper waste disposal.
Revised					
F.8	Inventory of BMP Locations & Needs	Mark Budnick, Highway Manager	Ongoing inventory of BMP locations and needs to address water quality issues	The locations of stormwater BMPs are maintained to develop projects for water quality improvement. This BMP supports BMPs F.3 and F.4. As discussed under “Notable Accomplishments”, the Town’s consultants are working to complete mapping efforts and the analysis of stormwater pollutant loads to develop a better understanding of priority stormwater management and improvement areas. This will serve as the basis for future BMP projects.  BMP projects at Pochet Road and Tonset Road are being constructed. Stormwater improvements at Pochet Road will address flooding issues and remediate stormwater entering the adjacent resource area. Stormwater improvements on Tonset Road incorporate bioretention for nutrient removal.	Complete the Preliminary Town-wide Stormwater Assessment and prioritize future BMP projects for funding.  Continue to maintain and update the BMP inventory and develop projects with the Marine & Fresh Water Quality Task Force.
Revised					

<b>BMP ID #</b>	<b>BMP Description</b>	<b>Responsible Dept./Person Name</b>	<b>Measurable Goal(s)</b>	<b>Progress on Goal(s) – Permit Year 12</b>	<b>Planned Activities – Next Permit Term</b>
F.9	Stormwater Training for Highway Staff	Mark Budnick, Highway Manager	Annual training on various topics, record of training attendance & materials	Highway Department staff are trained annually for the inspection and maintenance of the drainage system, including how to identify potential illicit discharges. Staff training was last completed on April 10, 2014 and a refresher course is planned for summer 2015.	Continue to train staff annually and begin maintaining copies of curriculum and attendance sheets. Review the stormwater training for Highway staff to determine if targeted educational topics could more effectively address current stormwater management needs.
Revised					
F.10	Municipal Facilities Evaluation	Mark Budnick, Highway Manager	Inventory of municipal facilities & report	In Year 10, the Town hired a consultant to inventory and evaluate municipal facilities for pollution prevention and good housekeeping practices to determine if any improvements are needed. Findings from the inspections were submitted to the Town in a final report. In Year 12, the town continued working to implement the recommendations.	Implement recommendations based on the availability of funding.

#### **7. BMPs for Meeting Total Maximum Daily Load (TMDL) Waste Load Allocations (WLA) <<if applicable>>**

<b>BMP ID #</b>	<b>BMP Description</b>	<b>Responsible Dept./Person Name</b>	<b>Measurable Goal(s)</b>	<b>Progress on Goal(s) – Permit Year 12</b>	<b>Planned Activities – Next Permit Term</b>
Revised					

#### **7a. Additions (none at this time)**

## **7b. WLA Assessment**

As discussed in this annual report, the Town of Orleans continues to develop significant ongoing programs that improve marine and fresh water quality and meet compliance responsibilities with the Phase II Permit and the pathogen and nutrient TMDLs. The efforts of the Marine and Fresh Water Quality Task Force, Orleans Pond Coalition, past and planned BMP construction projects and the efforts of the Orleans Water Quality Advisory Panel (OWQAP) have or will result in significant water quality and habitat improvements. In Year 12, the OWQAP was convened to guide studies and assessments, define preferred approaches, seek consensus and build widespread community support for a customized, affordable water quality management plan for the Town of Orleans. The panel consists of stakeholder representatives (Orleans Selectmen and representatives of engaged citizen constituencies), and liaisons from key town boards and commissions, organizations, neighboring towns, and regional, state, and federal partners. It is staffed and assisted by Water Resources Associates, Stantec and its consultants, and the Consensus Building Institute (CBI).

The OWQAP has met for twelve half-day meetings since July 2014, all of which were open to public attendance and comment. After examining a broad range of options, the Panel has reached agreement on a set of principles and some key elements of an Amended Water Quality Management Plan (the Plan) and associated Adaptive Management Plan. This Agreement includes and requires successful completion of numerous steps to resolve uncertainties and confirm key elements, such as treatment and disposal site suitability and availability, development of demonstration sites for non-traditional (NT) technologies, and further work to find an equitable distribution of costs necessary to the development of an acceptable and executable engineering plan that adheres to the key elements.

The Pleasant Bay Resource Management Plan was updated in 2013 and the updated plan was adopted in May 2013. The plan will further the Town's ongoing effort to work collaboratively with neighboring Towns to promote the natural resource health and public enjoyment of Pleasant Bay. The 2015 update to the plan is currently underway through the Pleasant Bay Alliance.

The Town and its consultant continued to evaluate program needs based on the draft 2014 Phase II Permit. The Town anticipates using this information and the results from other activities (e.g., CWMP, BMP projects) to develop an appropriate strategy to address the requirements related to TMDLs and impaired water bodies, as part of the Stormwater Management Plan (SWMP) development under the final permit (once issued). The Town continued to work towards development of a comprehensive SWMP to meet future regulatory requirements and water quality goals.

#### Part IV. Summary of Information Collected and Analyzed

In Year 12, the Orleans Water Quality Advisory Panel (OWQAP) was convened to guide studies and assessments, define preferred approaches, seek consensus and build widespread community support for a customized, affordable water quality management plan for the Town of Orleans. The OWQAP has met for twelve half-day meetings since July 2014, all of which were open to public attendance and comment. After examining a broad range of options, the Panel has reached agreement on a set of principles and some key elements of an Amended Water Quality Management Plan (the Plan) and associated Adaptive Management Plan. This Agreement includes and requires successful completion of numerous steps to resolve uncertainties and confirm key elements, such as treatment and disposal site suitability and availability, development of demonstration sites for non-traditional (NT) technologies, and further work to find an equitable distribution of costs necessary to the development of an acceptable and executable engineering plan that adheres to the key elements.

#### Part V. Program Outputs & Accomplishments (OPTIONAL)

##### Programmatic

Stormwater management position created/staffed	(y/n)	N
Annual program budget/expenditures	(\$)	\$161,520

##### Education, Involvement, and Training

Estimated number of residents reached by education program(s)	(# or %)	100
Stormwater management committee established	(y/n)	Y
Stream teams established or supported	(# or y/n)	N
Shoreline clean-up participation or quantity of shoreline miles cleaned	(y/n or mi.)	
Household Hazardous Waste Collection Days		
▪ days sponsored	(#)	2
▪ community participation	(%)	191 homes
▪ material collected	(tons or gal)	4.2 T   1,700 G
School curricula implemented	(y/n)	
Note: The Town also collected waste oil, gasoline and antifreeze at the Transfer Station that resulted in a total of 1,145 gallons.		

## Legal/Regulatory

	In place prior to Phase II	Under Review	Drafted	Adopted
Regulatory Mechanism Status (indicate with “X”)				
▪ Illicit Discharge Detection & Elimination				X
▪ Erosion & Sediment Control				X
▪ Post-Development Stormwater Management				X
Accompanying Regulation Status (indicate with “X”)				
▪ Illicit Discharge Detection & Elimination				X
▪ Erosion & Sediment Control				X
▪ Post-Development Stormwater Management				X

## Mapping and Illicit Discharges

Outfall mapping complete	(%)	100%
Estimated or actual number of outfalls	(#)	100
System-Wide mapping complete	(%)	95%
Mapping method(s)		
▪ Paper/Mylar	(%)	40%
▪ CADD	(%)	
▪ GIS	(%)	80%
Outfalls inspected/screened	(# or %)	100%
Illicit discharges identified	(#)	1
Illicit connections removed	(# ) (est. gpd)	Ongoing
% of population on sewer	(%)	0%
% of population on septic systems	(%)	100%



## Construction

Number of construction starts (>1-acre)	(#)	0
Estimated percentage of construction starts adequately regulated for erosion and sediment control	(%)	100%
Site inspections completed	(# or %)	0
Tickets/Stop work orders issued	(# or %)	0
Fines collected	(# and \$)	0
Complaints/concerns received from public	(#)	0

## Post-Development Stormwater Management

Estimated percentage of development/redevelopment projects adequately regulated for post-construction stormwater control	(%)	100%
Site inspections completed	(# or %)	0
Estimated volume of stormwater recharged	(gpy)	NA

## Operations and Maintenance

Average frequency of catch basin cleaning (non-commercial/non-arterial streets)	(times/yr)	1/yr
Average frequency of catch basin cleaning (commercial/arterial or other critical streets)	(times/yr)	1-2/yr
Total number of structures cleaned /inspected	(#)	450 cleaned. 900 inspected
Storm drain cleaned	(LF or mi.)	1,000 LF
Qty. of screenings/debris removed from storm sewer infrastructure	(lbs. or tons)	104 Tons
Disposal or use of sweepings (landfill, POTW, compost, recycle for sand, beneficial use, etc.)		BUD
Cost of screenings disposal	(\$)	~\$3,000

## Operations and Maintenance (con't.)

Average frequency of street sweeping (non-commercial/non-arterial streets)	(times/yr)	2/yr
Average frequency of street sweeping (commercial/arterial or other critical streets)	(times/yr)	2-3/yr
Qty. of sand/debris collected by sweeping	(lbs. or tons)	675 Tons
Disposal of sweepings (landfill, POTW, compost, beneficial use, etc.)	(location)	BUD
Cost of sweepings disposal	(\$)	~\$6,350
Vacuum street sweepers purchased/leased	(#)	0
Vacuum street sweepers specified in contracts	(y/n)	N

Reduction in application on public land of: (“N/A” = never used; “100%” = elimination)		
▪ Fertilizers	(lbs. or %)	100%
▪ Herbicides	(lbs. or %)	100%
▪ Pesticides	(lbs. or %)	100%

Anti-/De-Icing products and ratios	% NaCl	60% of the time
	% Sand/Salt	40% of the time
Pre-wetting techniques utilized	(y/n)	N
Manual control spreaders used	(y/n)	Y
Automatic or Zero-velocity spreaders used	(y/n)	Y*
Estimated net reduction in typical year salt application	(lbs. or %)	33% (ongoing)
Salt pile(s) covered in storage shed(s)	(y/n)	Y
Storage shed(s) in design or under construction	(y/n)	Y**
*3 of 5 spreaders now have ground speed controllers		
**A new DPW facility is being designed for FY 18 construction		