

Municipality/Organization: Town of Brewster  
EPA NPDES Permit Number: MAR 041096  
MassDEP Transmittal Number: X270464  
Annual Report Number & Reporting Period: Year 13  
April 1, 2015 – March 31, 2016

## NPDES PII Small MS4 General Permit Annual Report (Due: May 1, 2016)

### Part I. General Information

Contact Person: Patrick Ellis Title: Public Works Superintendent

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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: Patrick Ellis

Title: Public Works Superintendent

Date: April 27, 2016

## Part II. Self-Assessment

Brewster is a coastal community with an interest in protecting its surrounding fresh and salt water resources. Catch basin cleaning and street sweeping programs are completed annually and small stormwater projects are designed and installed either through contract services or using DPW personnel. As local financing of DPW activities is generally lower than required, we continue to be proactive in our search for outside funding opportunities related to stormwater projects.

The Town is in the next stage (Phase III) of its Integrated Water Resource Management Plan (IWRMP). Phase III will address an evaluation of wastewater and nitrogen management alternatives and the development and finalization of updated by-laws and regulations to implement the stormwater management recommendations developed during Phase II. The project is overseen by the Town's Comprehensive Water Planning Committee, which meets twice monthly to discuss the project at open public meetings. In November 2015, a revised Stormwater Management Bylaw (Chapter 272) was released for public comment. This regulation has revised language regarding controls for erosion and sediment on all development and redevelopment projects. Comments were received both internally and from the general public at public hearings in December 2015 and March 2016. Originally, the Bylaw was proposed for vote at the May 2016 Town Meeting, but additional revision will delay that vote until November 2016.

Work on the IWRMP is on-going, and has resulted in a wide range of water quality related reports, meetings and presentations. Although Comprehensive Wastewater Management Plans are typically concerned with wastewater, Brewster's Planning Department and Health Department have expanded the program to include water supply and stormwater runoff. Several public hearings have been held and various department heads have attended GIS training classes with the intent of expanding our stormwater records management effort. Educational materials, including a water-quality informational display, have been placed in Town Hall. The informational display includes steps individuals can take to reduce their impact on the environment. The Town's GIS system was further updated during the summer of 2012 to include all known discharge points of untreated stormwater runoff. Additional components of the Town's drainage system (catchbasins, drain manholes, stormwater BMP systems, and drainage pipe) and the locations of possible interconnections between private properties and the Town's drainage system were included. In addition, a wide variety of hand drawn sketch plans depicting stormwater components have been scanned and included within the GIS system.

Activities completed for the IWRMP within the most recent reporting period include some significant steps that have bridged the span between planning and actual implementation of water resource protection strategies. These include production of an alternatives analysis, selection of preferred alternatives and completion of a preliminary Implementation Plan.

Also included in this effort is a website dedicated to the IWRMP which is linked to the Town's official website. Documents related to the region's water quality efforts are available on this site as well as maps showing groundwater elevations, watershed/sub-watershed delineations feeding coastal embayments and freshwater resources, as well as results of a wide variety of water quality sampling and analysis. The completed reports cited above have also been posted to this website.

Also during this reporting period, the Town recently updated its Illicit Discharge Detection & Elimination (IDDE) Plan, BMP (Good-Housekeeping) Manual for Operation & Maintenance, and Stormwater Pollution Prevention Plan (SWPPP) for the Transfer Station and Public Works Garage. Training sessions on these updated reports were held during August and September 2015. The training sessions were well-attended by multiple Town departments. The IDDE Training included a field training component, during which Town DPW staff conducted outfall investigations at four targeted locations.

Recent awards for a coastal resiliency grant and a green infrastructure grant have increased public engagement for stormwater related issues. The coastal resiliency grant has provided opportunities to share knowledge on the impacts of climate change on water quality and infrastructure, including stormwater infrastructure. The Green Infrastructure plan, that allowed the evaluation of a managed retreat from an existing town beach parking lot, called for pulling back the pavement, restoring the dune system and tying it into an adjacent dune system and recently restored area. It included a bio-retention facility to manage remaining parking lot runoff and installation of a swale to convey flows from the adjacent road. This project is a good example of the pro-active efforts the Town has undertaken to meet the obligation of the NPDES program, but also the vision of the local community.

As the Final Massachusetts MS4 General Permit has just recently been issued, Brewster will be reviewing the requirements of the new permit and during 2016 assessing how it will plan to meet the requirements.

**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 13	Planned Activities -- Permit Year 13
Revised	Develop and distribute educational materials	BoH Nancy Ice	Biannual Mailings	Increased costs associated with mailings, reproductions, and workload in the Health Department has limited the effectiveness of some distribution options. Information on stormwater management is available at Town Hall and educational materials are distributed through the Comprehensive Water Planning Committee. Public education and outreach was also accomplished while dealing with water quality issues affecting many communities, including pet waste.	Review the Final MS4 Permit and plan to make revisions if needed.  As a part of the Coastal Resiliency grant, the Town of Brewster will develop educational materials on the vulnerability of infrastructure and natural resources to flooding and erosion to adapt to changing climate conditions. The Town will continue to provide opportunities for citizens to learn more about ongoing projects, including a workshop that took place in April 2016.
Revised	Additional Educational Materials	Patrick Ellis, DPW Superintendent	Information Documents	The DPW has not created links to Stormwater related public information from their web page, but information is available through the Comprehensive Water Planning Committee. In addition to the above effort, DPW was able to develop a GIS based plan depicting our stormwater efforts in the Stony Brook Watershed. Besides providing a broad overview to the public, the document was also used to describe our efforts to the funding authorities in Town.	The DPW working in concert with the Planning Board will continue to work on educational outreach material, and will evaluate requirements of the new Final Permit in order to incorporate required new information as appropriate.

## 2. Public Involvement and Participation

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 13	Planned Activities – Permit Year 13
	Establish Stormwater Web Site with pollution reporting capability	IT – Kathleen Lambert	Town Web Site is operational with water quality links available through multiple committee and department pages.	The Town's website is a viable alternative for conveying Town related information. Again, the IT department consists of one person and other duties and projects have taken precedence over our Stormwater II efforts.	The Town of Brewster will continue to add/update Stormwater issues on its website as the Comprehensive Water Management Plan is further developed.
Revised				<p>In addition, as mentioned in the summary, the Town began the third phase of developing its Integrated Water Resources Management Plan (IWRMP) in June 2013. A component of the work by our consultant, Horsley Witten Group, is the development of a web based informational tool. The website has been developed and is accessed via a link on the Town of Brewster home webpage. Much information is available on this site and will be updated as additional information is available.</p> <p>The website can be accessed at:  <a href="http://www.town.brewster.ma.us/committees-mainmenu-29/comprehensive-water-planning-committee/1185-integrated-water-management-website">http://www.town.brewster.ma.us/committees-mainmenu-29/comprehensive-water-planning-committee/1185-integrated-water-management-website</a></p>	<p>Recent additions to the Website include copies of completed reports related to Phase III of the IWRMP: Schoolhouse Pond watershed assessment, the Pleasant Bay Nitrogen Management Alternatives Analysis Report, the Mill Ponds Management Plan and the Herring River Nitrogen management Assessment Technical Memo.</p> <p>Review the Final MS4 Permit and plan to make revisions to this BMP if needed.</p>

### 2a. Additions

	Community Meetings for Integrated Water Resources Management Plan (IWRMP)	Town Planner (TBD) And BOS-appointed Implementation Group	Several meetings annually	Brewster's Comprehensive Water Planning Committee (CWPC) hosts several community meetings each year to bring the public up to date on the Town's IWRMP process, including information on stormwater and BMP's for homeowners.	Additional meetings will be held by a newly formed Implementation Group as the project continues and will include proposed stormwater remediation projects.
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	Lower Cape Expo	Town Planner (TBD) and/or CWPC Implementation Group	Signing up people for e-mail list, providing handouts	The CWPC has had a table at the Expo in recent years. Through two recent Expo appearances, over 40 people have joined the e-mail list, many have come to community meetings and many more took printed information. Due to costs, the Town did not attend the past two years, as originally planned.	Members from the CWPC Implementation Group are planning to participate in next year's Expo.
	Brewster Conservation Day	Town Planner (TBD) and/or CWPC Implementation Group	Signing up people for e-mail list, providing handouts	The CWPC had a table at last year's Conservation Day, which took place on July 11, 2015, and spent the day talking to residents and property owners about the IWRMP and things they can do, signing people up for the e-mail list, and providing printed information.	Members from the CWPC Implementation Group will participate in next year's Conservation Day scheduled for 7/16/16.

### 3. Illicit Discharge Detection and Elimination

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 13	Planned Activities – Permit Year 13
Revised	Map Stormwater facilities	Patrick Ellis, DPW Superintendent	Update Stormwater data on Town GIS system.	Town of Brewster’s GIS system was upgraded and locations of untreated stormwater runoff discharges were mapped by our consultant, Kleinfelder, between 2012 and 2014 to include untreated stormwater discharge locations, as well as the locations of recently installed stormwater BMPs, possible system interconnections, and additional drainage structures.	Evaluate the requirements of the new Final MS4 Permit and plan to make revisions if needed. Continue the implementation of the GIS System at the DPW as appropriate.  Staffing issues will have an effect on this program. Training and/or additional personnel to implement the program are limited.
Revised	By-Law prohibiting illicit discharge	Town Planner (TBD)	Pursue passage of Illicit Discharge By-Law	The by-law was passed by Town meeting in November of 2011.	The CWPC Implementation Group and Planning Board will be looking at ways to update by-laws and regulations to better address stormwater remediation, particularly as it regards any new requirements associated with the new Final MS4 Permit.
Revised	Illicit discharge detection	Chris Miller Natural Resources Director & Coordinator	Sampling and Analysis of water bodies	Mr. Miller (Natural Resources Director) and Mr. Burch (Natural Resource Coordinator) continued the department’s sampling and analysis program. Mr. Miller was instrumental in obtaining the Natural Resources Conservation Service funding for the aforementioned stormwater related grants.	The Town will continue its IDDE program and water sampling efforts and will likely expand reporting/publicizing results as public interest and following increases.

#### 3a. Additions

	<p>Illicit Discharge Detection &amp; Elimination (IDDE) Plan</p>	<p>Patrick Ellis, DPW Superintendent</p>	<p>Update IDDE Plan</p>	<p>The Town's 2013 IDDE Plan was updated in August 2015 by Kleinfelder, the Town's consultant. IDDE Plan Annual training was provided by the Town's consultant Kleinfelder in September, 2015 to DPW Staff responsible for implementing the IDDE Plan. The training attendees also included two staff from the Natural Resources Dept. and one from the Conservation Dept.</p>	<p>Review the Final MS4 Permit and plan to make revisions if needed.  Continue to implement the Program.</p>
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#### 4. Construction Site Stormwater Runoff Control

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 13	Planned Activities – Permit Year 13
Revised	Revise Development Plan Review By-Law	Planning Board Town Planner (TBD)	By-Law update	The Development Plan Review By-Law was updated this past year and replaced with a Staff-Review By-Law which improves the exchange of development information from department heads to prospective builders, developers, and/or property owners. Water quality issues are an important component of these discussions.	The members of the Staff Review Committee will continue to improve the discussions with prospective developers with regards to development requirements including stormwater quality. Any developments beyond a single-family home are encouraged by staff to opt for review.  Review the Final MS4 Permit and plan to make revisions if needed.
Revised	Establish public input mechanism	Planning Board Town Planner (TBD)	In progress	Public input is a required component of any by-law change or development. The Commonwealth of Massachusetts has well defined open meeting law requiring public access to all deliberations, with some exceptions. As such public input is included in the development of all by-laws and regulations. Public input for stormwater related issues is achieved through public hearings required of our consultants that assist with the IWRMP.	We plan to continue with the IWRMP and the public informational sessions that we require of our consultants. Also, with the wealth of information available on the Town's website, getting information to the public is working well. Getting the public to respond to our water quality improvement efforts is the challenge.

### 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 13	Planned Activities -- Permit Year 13
Revised	Revise Development Plan Review By-Law	Planning Board Town Planner (TBD)	By-Law update	The Town passed a revised development review process called Staff Review, and also adopted a Site Plan Review by-law in May 2011.	Review the Final MS4 Permit and plan to make revisions if needed.  The Town is looking at ways to promote the Staff Review process.
Revised	Construction Inspection	Construction inspection by proponent engineer and DPW	Continued project construction inspection.	The Town does not have a formal Engineering Department and uses contract services as well as trained staff in the DPW. Also, development in the area is of a residential nature, and construction projects disturbing more than an acre are rare. The Town requires the project proponent's engineer to provide inspection reports and stamp reports for recordkeeping purposes.	Review the Final MS4 Permit and plan to make revisions if needed.  Continue our inspection program and continue to improve and update regulations with regards to water quality in all areas, including but not limited to water quality, water supply, wastewater, and stormwater runoff. Any new requirements associated with the new permit will be incorporated in accordance with timelines provided in the permit.

## 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 13	Planned Activities – Permit Year 13
	Employee Education	Patrick Ellis, DPW Superintendent  DPW Foreman	Training programs	Best Management Practices for Operations and Maintenance Training was provided to the Town of Brewster by the Town's Consultant, Kleinfelder, in September 2015 corresponding with the manual updated in August 2015. Employees present for this training represented the Department of Public Works, Building Department, Department of Natural Resources, Health Department, Town Hall, Police Department, Conservation Committee, and Maintenance Department.	Review the Final MS4 Permit and plan to make revisions if needed.  Continue the program.
Revised					
	Operation & Maintenance Schedule	DPW Supt Patrick Ellis  DPW Foreman	Annual catch basin cleaning and annual winter sand cleanup	These two programs are completed annually. The sweeping is completed with Town personnel and equipment while the catchbasin cleaning is completed using contracted services.	Continue the program. The Town is considering incorporating catch basin debris disposal in the upcoming contracted service agreement.
Revised				The Town also provides services for a discounted fee to private roads where cleaning will take place on a per catch basin fee basis. This allows the Town to ensure to the extent possible that private systems contributing to the MS4 are maintained properly	

## 7. BMPs for Meeting Total Maximum Daily Load (TMDL) Waste Load Allocations (WLA)

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 13	Planned Activities – Permit Year 13
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### 7a. Additions

	Public Education about Pet Waste	Town Planner (TBD) Town Clerk w/ Dog Licenses	Re-Print and Distribute Educational Materials	See BMP #1. Brochures are available at the Town Office building and are distributed at certain Town events including Brewster Conservation Day.  In Permit Year, 13, the Town's Consultant, Kleinfelder, assessed site conditions at three public parks which were identified as potential sources of waste from waterfowl and pets. Each location was assessed in good condition with adequate signage and waste receptacles.	Distribute educational materials and develop plan to modify, if necessary, to enhance the message.  Review the Final MS4 Permit and plan to make revisions to this BMP if needed.
	Septic Systems – Tracking and Education	Nancy Ice - Health Department	Distribute Educational Materials	The locations of failing septic systems are tracked in a Board of Health database. These systems will eventually be incorporated into the Town's GIS.	Re-assess existing outreach activities and educational materials and develop a plan to modify if necessary to enhance the message. Review the Final MS4 Permit and plan to make revisions if needed.
	Outfall & Runoff Inventory	DPW	GIS Map all Outfalls and parking area runoff	All mapping complete.	See IDDE BMP. Review the Final MS4 Permit and plan to make revisions if needed. Implement IDDE Plan catchment investigations.
	Water Quality Testing	Chris Miller – Natural Resources	Water Quality Testing	See BMP 3	Re-assess existing sampling efforts and develop a plan to modify if necessary to monitor impaired waters.

### 7b. WLA Assessment

The MS4 Permit has requirements specific to stormwater discharges to Impaired Waters with approved TMDLs. In Brewster's case, currently these waters include Namskaket and Quivett Creeks, which are impaired for pathogens (fecal coliform). Although there are two impaired ponds (Sheep Pond and Baker), these ponds are impaired for mercury in fish; pollution that has been attributed to air pollution and is not applicable to the NPDES MS4 program. Pleasant Bay, although impaired for nutrients, does not receive stormwater discharge from Brewster's MS4. The applicable TMDL is the Cape Cod Basin Pathogen TMDL (August 2009). The Implementation Plan for the Cape Cod Pathogen TMDL states the following:

*"The watershed based approach applied to complete the Cape Cod watershed pathogen TMDL is straightforward. The approach is focused on identification of sources, source reduction, and stepwise implementation of appropriate management plans. Once identified, sources are required to meet applicable WQS for indicator bacteria or be eliminated. This approach does not include water quality analysis or other approaches designed to link ambient concentrations with source loadings. For pathogens and indicator bacteria, water quality analyses are generally resource intensive and provide results with large degrees of uncertainty. Rather, this approach focuses on sources and required load reductions, proceeding efficiently toward water quality restoration activities."*

Likely sources of coliform could include:

- Failing septic systems
- Illicit connections from septic systems or graywater
- Stormwater runoff from pet waste
- Wildlife (waterfowl)
- Boat pump-out discharges

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

- Number of Town staff trained 2015: 20
- Number of MS4 outfalls in Brewster: 20
- % of MS4 outfalls mapped, inspected: 100%
- Number of illicit discharges identified: 0

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

**Programmatic**

Stormwater management position created/staffed	(y/n)	N
Annual program budget/expenditures – At the Fall 2012 Special Town Meeting, funding was authorized with the specific intent of addressing the requirements of the upcoming Stormwater II change in law. This funding did not include any additional staffing. The Town continues to assess their program and did provide public comment to EPA during the public comment period for the Draft 2014 General Permit.	(\$)	

**Education, Involvement, and Training**

Estimated number of residents reached by education program(s)	(# or %)	4,000
Stormwater management committee established	(y/n)	No – although the Comprehensive Water Planning Committee serves similar purpose.
Stream teams established or supported	(# or y/n)	No
Shoreline clean-up participation or quantity of shoreline miles cleaned	(y/n or mi.)	Y – 9 miles
Household Hazardous Waste Collection Days		
▪ days sponsored	(#)	
▪ community participation	(%)	
▪ material collected	(tons or gal)	
School curricula implemented	(y/n)	No

### Legal/Regulatory

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

### Mapping and Illicit Discharges

Outfall mapping complete	(%)	100%
Estimated or actual number of outfalls	(#)	20
System-Wide mapping complete	(%)	100%
Mapping method(s)		
▪ Paper/Mylar	(%)	
▪ CADD	(%)	0%
▪ GIS	(%)	100%
Outfalls inspected/screened	(# or %)	100% (Est)
Illicit discharges identified	(#)	0
Illicit connections removed	(#) (est. gpd)	0
% of population on sewer	(%)	0%
% of population on septic systems	(%)	100%

### Construction

Number of construction starts (>1-acre)	(#)	0
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Estimated percentage of construction starts adequately regulated for erosion and sediment control	(%)	0
Site inspections completed	(# or %)	0 (Est)
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	(%)	0
Site inspections completed	(# or %)	0
Estimated volume of stormwater recharged	(gpy)	unknown

### Operations and Maintenance

Average frequency of catch basin cleaning (non-commercial/non-arterial streets)	(times/yr)	Annual
Average frequency of catch basin cleaning (commercial/arterial or other critical streets)	(times/yr)	Annual
Total number of structures cleaned	(#)	900
Storm drain cleaned	(LF or mi.)	900
Qty. of screenings/debris removed from storm sewer infrastructure	(lbs. or tons)	473.6 tons
Disposal or use of sweepings (landfill, POTW, compost, recycle for sand, beneficial use, etc.)		Although the Town of Brewster has a Beneficial Use Determination (BUD) for these materials, the Town sought-out a more cost effective method of disposal, and disposed of all sweepings and catchbasin cleanings as non-BUD material at the Crapo Hill Landfill in New Bedford, MA.
Cost of screenings disposal	(\$)	\$40,000
Average frequency of street sweeping (non-commercial/non-arterial streets)	(times/yr)	Two times per year in a wetlands discharge environment. Otherwise annual sweeping.

Average frequency of street sweeping (commercial/arterial or other critical streets)	(times/yr)	Two times per year
Qty. of sand/debris collected by sweeping	(lbs. or tons)	967.69 tons
Disposal of sweepings (landfill, POTW, compost, beneficial use, etc.)	(location)	See above
Cost of sweepings disposal	(\$)	\$60,000 (est)
Vacuum street sweepers purchased/leased	(#)	1
Vacuum street sweepers specified in contracts	(y/n)	N/A

Reduction in application on public land of: ("N/A" = never used; "100%" = elimination)		
▪ Fertilizers – We generally fertilize our fields using compost.	(lbs. or %)	unknown
▪ Herbicides	(lbs. or %)	Not used except at Golf Course
▪ Pesticides	(lbs. or %)	Not used except at Golf Course

Anti-/De-Icing products and ratios	% NaCl	2:1 Sand/NaCl
	% CaCl <sub>2</sub>	0
	% MgCl <sub>2</sub>	0
	% CMA	0
	% Kac	0
	% KCl	0
	% Sand	2:1 Sand/NaCl
Pre-wetting techniques utilized	(y/n)	Y
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 %)	unknown
Salt pile(s) covered in storage shed(s)	(y/n)	Y
Storage shed(s) in design or under construction	(y/n)	Y new larger shed to be constructed Yr 14.

