



CITY OF WINOOSKI
**NOTICE OF INTENT
AND
STORMWATER MANAGEMENT PLAN**

**GENERAL PERMIT 3-9014 (2012)
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
NUMBER: VTR040000**

**For Stormwater Discharges From
Small Municipal Separate Storm Sewer Systems (MS4)**

**May 2003
Updated: May 2013**

**CITY OF WINOOSKI
MS4 PHASE II
STORM WATER MANAGEMENT PROGRAM
GENERAL PERMIT 3-9014 (2012)**

III. STORMWATER MANAGEMENT PROGRAM

The permittee must develop a written stormwater management program (SWMP). The SWMP must be signed in accordance with Section VI.H. of this Permit. The SWMP shall provide measureable goals for the development and implementation of the six minimum control measures described in Subparts IV.F and G and additional measures necessary to protect water quality described in Part IV. A permittee's approved Flow Restoration Plan developed in accordance with Subpart IV.C.1 shall be considered a part of the permittee's SWMP. The signature of the SWMP is provided below.

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 gathered and evaluated 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 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.

Name: Katherine Decarreau Title: City Manager

Signature:  Date: 5.30.13

IV. DISCHARGE REQUIREMENTS

C. Discharges to Impaired Waters

Impaired waters are those waters that the Secretary has identified pursuant to Section 303(d) of the Clean Water Act as not meeting the Vermont Water Quality Standards. Impaired waters encompass both those with approved Total Maximum Daily Loads (TMDLs), and those for which TMDL development has been identified as necessary, but for which a TMDL has not yet been approved by the Secretary or EPA. Stormwater impaired waters include those waters that the Secretary has listed as impaired primarily due to stormwater runoff on the EPA-approved State of Vermont 303(d) List of Waters.

1. *Discharges to Impaired Waters with an Approved TMDL*

- b) *If the applicable TMDL does not specify a wasteload allocation or other requirements either individually or categorically for the small MS4 discharge and the permittee has complied with the terms and conditions of this permit, and has undertaken measures and documented them in the SWMP to address the pollutant(s) addressed by the TMDL, then compliance with these conditions will be presumed adequate to meet the requirements of this permit.*

The Winooski River is listed as impaired for Mercury from the mouth to the Winooski Dam. This section of river is included in the Northeast Regional Mercury TMDL approved by the EPA in 2007. The TMDL does not specify a wasteload allocation for the MS4 discharge. The City is meeting the terms and conditions of General Permit 3-9014 (2012) in regard to the Northeast Regional Mercury TMDL.

- e) *For those small MS4s that discharge to stormwater-impaired waters with EPA-approved TMDLs the permittee shall comply with the following requirements:*

- (1) *The permittee shall develop and submit a comprehensive Flow Restoration Plan (FRP) for the portion of each stormwater-impaired watershed within the permittee's boundaries. Permittees that discharge into the same stormwater-impaired watershed may elect to cooperate to develop a single FRP for the watershed. The FRP shall be submitted to the Secretary no later than three years after the date of issuance of an authorization to discharge to the permittee under this general permit.*

Stormwater runoff from the MS4 discharges to the Morehouse Brook watershed, which is designated as impaired by stormwater. An EPA approved TMDL has been developed for the Morehouse Brook watershed. An FRP will be developed in accordance with the schedule of compliance listed in the Table 1 which is based on milestone dates calculated from the date of issuance of an authorization to discharge to the City under this General Permit.

This watershed originates in the Town of Colchester. As part of the FRP, the watershed boundaries will be re-evaluated to consider recent routing improvements to the stormwater system within the Winooski portion of the Morehouse Brook watershed. The FRP will be coordinated with the efforts of the Town of Colchester for Morehouse Brook.

TABLE 1
Morehouse Brook FRP Schedule of Compliance

Month 3	Submit to the Secretary for approval a plan for meeting the requirements of IV.C.1(e)(7) (flow monitoring plan).
Month 6	Submit to the Secretary for approval a plan for addressing expired state stormwater permits discharging to the permittee's MS4 system. This plan may include a request to the Secretary to exercise its Residual Designation Authority (RDA) pursuant to Clean Water Act §§402(p)(2)€ and (6) and 40 C.F.R § 122.26 (a)(9)(i)(C) and (D) to require NPDES permits for stormwater systems with expired state stormwater permits. The permittee's plan for addressing the expired permits shall insure that all permitted facilities demonstrate compliance with the existing expired permit, at a minimum, and insure that these facilities are incorporated into the FRP.
Month 12	Submit semi-annual report*
Month 18	Submit semi-annual report*
Month 24	Submit a report verifying that all existing stormwater systems with expired permits are now in compliance with the existing expired permit or subject to a NPDES RDA permit, including verification that all required maintenance has been performed.
Month 30	Submit semi-annual report*
Year 3	Submit a complete FRP to the Secretary for approval.
Month 43 and every 6 months thereafter	Submit semi-annual report*
Date specified in FRP approval (not to exceed 20 years)	Complete implementation of the approved FRP

*The permittee shall submit a report on a semi-annual basis on the permittee's development and implementation of the FRP. The report shall address actions taken to implement all FRP components, including the extent of BMP implementation, an estimate of the extent of completion for remaining items, and an assessment of the ability to meet outstanding schedule items. The FRP report shall include a written statement signed by a designer that any BMP built or implemented within the preceding 6 month period was constructed in compliance with the approved plans. The permittee shall include in each FRP report an estimate of any associated reductions in phosphorus loading that occur as a result of implementation measures undertaken by the permittee to meet the flow reduction targets.

- (4) *Commencing two years after the issuance of an authorization or designation as a regulated small MS4, the permittee shall develop a program to identify opportunities for and provide technical assistance to landowners in the implementation by landowners of low impact BMPs such as maximizing disconnection, maximizing infiltration of stormwater runoff, preventing and eliminating soil erosion, and preventing and eliminating the delivery of pollutants to stormwater conveyances.*

The City participates in the Regional Stormwater Education Program (RSEP) along with other MS4 communities in Chittenden County. The RSEP uses television, radio, print, and website to distribute messages linked to specific stormwater problems such a proper pet waste disposal, minimizing debris from home projects, proper disposal of toxic chemicals, safer car washing, reducing erosion and over fertilization of lawns and gardens. In addition to the multi-channel media campaign, educational events hosted throughout

Chittenden County also raise awareness and encourage positive behavior change in residents.

The City provides technical assistance to landowners through the Chittenden County Stream Team. This is a coordinated effort by Chittenden County MS4s to engage citizens to implement projects to reduce non-point source pollution and stormwater volume at a local level.

The City will remain active in both of these programs in order to provide assistance to landowners in the implementation of low impact BMPs in the Morehouse Brook watershed and City-wide.

- (5) *Commencing two years after the issuance of an authorization or designation as a regulated small MS4, the permittee shall prepare and submit to the Agency a report on the legal authorities or strategies that the permittee has adopted to protect and regulate development in the stream corridors of stormwater impaired waters.*

Two years after the issuance of an authorization as a regulated small MS4, the City will submit to the Agency a report on the legal authorities or strategies that the City has adopted for enhanced protection and regulation of development in the Morehouse Brook stream corridors.

The City already regulates stream corridors through the use of buffers and setbacks as addressed in several locations in the Winooski Municipal Development Plan under "Proposed Land Use" and in the Winooski Municipal Code Chapter 18 Stormwater Management document. Chapter 18 establishes a minimum forest buffer for all streams in Winooski of ten (10) with a requirement to expand buffer depending on stream order, percent slope, and critical areas.

Highlights from the Municipal Development Plan that address stormwater are summarized below.

Goals (Page 21):

Goal: Identify, protect and preserve important natural and historic features including significant natural areas, outstanding water resources including rivers and wetlands, and important historic structures and districts.

Planned Action: A namesake river features prominently in the geography and historical development of Winooski. Floodplains are protected from development through zoning; a significant portion of the river frontage is reserved from development and managed for recreational use. A National Register Historic District is established in

the downtown area. Design and site plan review mechanisms are in place or recommended for implementation.

Floodplain, Wetlands & Winooski River (Page 30):

- Winooski's natural resource base will be protected to preserve ecosystems and natural cycles, which affect the overall quality of life. Due to the dense urban nature of Winooski, it is important that these lands be acknowledged for their natural value and preserved.
- The City of Winooski shall strictly enforce its floodplain ordinance and continue measures which protect its floodplain, wetlands, and those areas which serve as natural buffer zones.
- To improve the quality of stormwater which is discharged into the river, Winooski will work to develop programs that focus on pollutant and sediment loading reduction.

(6) Commencing two years after the issuance of an authorization or designation as a regulated small MS4, the permittee shall prepare and submit a plan for outlining options for enhanced protection of stream corridors of stormwater impaired waters. The plan should include a map of stream corridors depicting areas that have been converted to impervious surface. In preparing this plan, the permittee should review riparian buffer and stream fluvial geomorphological information provided to the permittee by the Agency as a result of the Agency's preparation of stormwater TMDLs.

Based on the riparian buffer and geomorphological information for the Morehouse Brook stream corridor that have been developed, the City will establish minimum widths of stream channel buffers and setback requirements to enhance protection of the stream corridor.

For those areas where the stream corridor has been developed with impervious surfaces, options for corridor restoration will be considered.

The City has already made progress towards corridor restoration. In 2004, the City was awarded a Section 319 nonpoint source grant for implementation of best management practices in the Morehouse Brook watershed. The benefits of implementing the best management practices were reduction of the flow volumes, velocity, and sediment sources of the Malletts Bay Avenue discharge. The following best management practices were implemented for the existing storm sewer system:

- The existing storm sewer system is being used for temporary storage to attenuate the stormwater runoff volume.
- As of 2012, twenty (20) catch basins in the Morehouse Brook watershed have filters to capture sediment and other pollutants. The filters are

routinely cleaned and replaced.

- The City completed flow monitoring and sampling of the before and after conditions at the discharge.

In 2011, the City worked with the new residential development on Morehouse Drive on stormwater diversion improvements for the Malletts Bay stormwater collection system. For this project, a diversion structure was installed in the 48" diameter storm drain to redirect the flow in a new 30" storm drain through the new development. The majority of the stormwater from the Malletts Bay subwatershed is now diverted from Morehouse Brook and discharges directly to the Winooski River. The watershed boundaries of Morehouse Brook will need to be re-evaluated in the FRP to consider this modification.

In July 2006, the City also constructed a tiered 3 basin rain garden on North Street to attenuate stormwater flow and improve water quality within the Morehouse Brook watershed.

(7a) The permittee shall implement, or otherwise fund, a flow and precipitation monitoring program, subject to approval by the Secretary, in its respective stormwater impaired watersheds.

The City of Winooski will contribute funding to the Agency for the flow and precipitation monitoring program of the Morehouse Brook watershed in proportion with the area of impaired watershed within the City boundary. The SWMP will be amended to include this information once the State has determined how the monitoring program will be managed and implemented.

2. Discharges to Impaired Waters without an Approved TMDL

If a small MS4 discharges to an impaired water that is without an approved TMDL, the permittee shall comply with Part IV of this permit and address in its SMWP and annual reports how any discharges that have the potential to cause or contribute to the impairment will be controlled so that they do not cause or contribute to the impairment. A small MS4 may achieve an increased level of control through additional BMPs or enhancement of existing BMPs. This plan shall be designed as an iterative process. The content of the response plan should reflect the magnitude and complexity of the impairment and the permittee's potential to contribute to the impairment. This 60 day period does not constitute a grace period for purposes of enforcement of water Quality Standards or this permit.

In 2011, the EPA disapproved the Vermont portion of the Lake Champlain Phosphorus TMDL and is currently redeveloping a new TMDL. Prior to the disapproval, the Phosphorus TMDL had recommendations for municipalities including: adoption of erosion controls (page 65), improved construction and maintenance practices for

gravel backroads (page 69), promotion of riparian buffers and setbacks (page 76), and impervious surface minimization (page 76). The City of Winooski through its ordinances and maintenance programs continues to follow these original TMDL recommendations.

Adoption of Erosion Controls: Under minimum control measure #4, construction site storm water runoff control, the permit requires the City to develop and enforce a program to reduce pollutants in stormwater runoff from construction activities. As presented in Table 11, the City has selected the following best management practices to comply with the permit:

- Properly permit City construction activities.
- Enforce the City's Stormwater Ordinance, which includes erosion and sediment controls.

Improved Construction and Maintenance Practices for Gravel Backroads: This recommendation doesn't apply to the City of Winooski. The City is an urban, densely developed community and all City streets are paved.

Impervious Surface Minimization: Impervious surface minimization is addressed in several locations within the Winooski Municipal Development Plan under "Proposed Land Use" as summarized below.

Residential Land Use - Residential Neighborhoods (Page 24):

- Winooski shall enhance the character of its neighborhoods through zoning techniques and improvements to public property. Buffering such as landscaping, screening and setbacks will be required between residential and non-residential land uses. Urban design strategies, particularly in the realms of street lighting and trees, are planned to improve residential neighborhood characteristics.

Residential Land Use - Residential Infill (Page 25):

- Infill housing shall be encouraged and permitted when it is compatible with surrounding neighborhood character and does not burden municipal services; design and site standards for infill housing must first be developed.

Downtown Winooski (Page 28):

- To that end, Downtown redevelopment will recreate the core downtown with mixed-use, high density new construction and rehabilitation, enriched by view corridors and open spaces, which will include both compact urban spaces and expansive riverside areas.

Industrial & Business Land Use (Page 29):

- The City of Winooski intends to investigate environmentally sensitive uses in a portion of Gilbrook by:

- Maximizing the natural state of the area;
- Completely buffering between developed areas and recreational land uses;
- Utilizing the entire area, including pedestrian/running/skiing/fitness trail around the area's perimeter.

Streetscapes - Neighborhood Streets (Page 33):

- Winooski will seek funding to develop and implement neighborhood specific streetscape designs and incorporate these designs into its street reconstruction programs. A streetscape which is well designed and maintained, including greenbelts, sidewalks, street trees and appropriate lighting, contributes to neighborhood pride and sense of place.

Streetscapes - Street Trees (Page 34):

- Winooski recognizes that its urban forest is critical to its character and supports programs which plant, replace and maintain trees in public rights of way, municipal parks, and on private property. Trees have many attributes in a city setting, and improve the quality of life in numerous ways, by:
 - Absorbing and infiltrating rainfall thereby reducing stormwater runoff
 - Producing oxygen for people and animals to breathe,
 - Regulating winds and urban temperatures,
 - Controlling soil erosion.

Parking (Page 37):

- In Winooski's Downtown Growth Center and commercial development areas, it is envisioned that additional parking will be provided in structured facilities.

G. Requirements to Reduce Pollutants to the Maximum Extent Practicable – “The Six Minimum Measures”

1. *A permittee must develop, implement, and enforce a Storm Water Management Program (SWMP) designed to reduce the discharge of pollutants from the small MS4 to the maximum extent practicable (MEP), to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act. For purposes of this permit, narrative effluent limitations requiring implementation of best management practices (BMPs) are the most appropriate form of effluent limitations when designed to satisfy technology requirements (including reductions of pollutants to the maximum extent practicable) and to protect water quality. Implementation of best management practices for the purposes of the six minimum measures consistent with the provisions of the SWMP constitutes compliance with the standard of reducing pollutants “maximum extent practicable”.*

H. Minimum Control Measures

The six (6) minimum control measures included in the City of Winooski SWMP are:

- 1) Public Education and Outreach on Storm Water Impacts
- 2) Public Involvement/Participation
- 3) Illicit Discharge Detection and Elimination
- 4) Construction Site Storm Water Runoff Control
- 5) Post-Construction Storm Water Management in New Development and Redevelopment
- 6) Pollution Prevention/Good Housekeeping for Municipal Operations

1. Public Education and Outreach on Storm Water Impacts

Rationale. The best management practices listed in Table 2 are selected for this minimum control measure to comply with the permit requirements. The City is participating in the RSEP as described in the Memorandum of Understanding (MOU) dated January 2003 and February 2008. The decision process for implementing the education programs is defined by the Steering Committee representing the MS4s. A website entitled smartwaterways.org is maintained as the primary education tool. The RSEP has developed informational brochures, which are distributed at participating municipalities and at events sponsored by RSEP. Media buys for RSEP are made every spring and fall.

The City will post this SWMP, the annual reports and other relevant documents in a timely fashion on the City's stormwater web site.

The City will work with other RSEP participating communities to develop school educational materials and teacher training regarding local stormwater concerns. The City's preference is to develop a school education program through RSEP that is consistent throughout the County.

TABLE 2
Public Education and Outreach on Storm Water Impacts
Selected Best Management Practices

ID #	Corresponding State BMP ID from NOI	Best Management Practice (BMP)
1	1-2,3,4	Participate in regional stormwater program (RSEP).
2	1-1	Maintain website on Winooski Environment Stormwater at www.winooskivt.org .
3	1-5d	Develop school materials and teacher trainings

Implementation Plan. The implementation schedule for each BMP is provided in Table 3, and includes the designation of the responsible party.

Measurable Goals. The measurable goals for each BMP were selected to evaluate the success of this minimum control measure and are described in Table 4.

TABLE 3
Public Education and Outreach on Storm Water Impacts
Implementation Schedule

Schedule	ID # -Year ¹	Best Management Practice	Responsible Party
Year 1	1-1	Participate in regional stormwater education program.	Wastewater Superintendent
	2-1	Maintain website on Winooski Environment Stormwater at www.winooskivt.org .	Webmaster
	3-1	Develop school materials and teacher trainings	RSEP
Year 2	1-2	Participate in regional stormwater education program.	Wastewater Superintendent
	2-2	Maintain website on Winooski Environment Stormwater with current information.	Webmaster
	3-2	Develop school materials and teacher trainings	RSEP
Year 3	1-3	Participate in regional stormwater education program.	Wastewater Superintendent
	2-3	Maintain website on Winooski Environment Stormwater with current information.	Webmaster
	3-3	Develop school materials and teacher trainings	RSEP
Year 4	1-4	Participate in regional stormwater education program.	Wastewater Superintendent
	2-4	Maintain website on Winooski Environment Stormwater with current information.	Webmaster
	3-4	Implement school materials and teacher trainings	RSEP
Year 5	1-5	Participate in regional stormwater education program.	Wastewater Superintendent
	2-5	Maintain website on Winooski Environment Stormwater with current information.	Webmaster
	3-5	Implement school materials and teacher trainings	RSEP

Notes:

1. The first digit of the ID # represents the BMP number and the second digit represents the year.

TABLE 4
Public Education and Outreach on Storm Water Impacts
Measurable Goals

ID # - Year	Best Management Practice	Measurable Goal
1-1	Participate in regional stormwater education program.	The success of the regional program will be based on statistically valid pre and post surveys of citizen behavior.
2-1	Maintain website on Winooski Environment Stormwater with current information.	Document the number of contacts and feedback received by the webmaster.
3-1	Develop school materials and teacher trainings	Engage RSEP members
1-2	Participate in regional stormwater education program.	The success of the regional program will be based on statistically valid pre and post surveys of citizen behavior.
2-2	Maintain website on Winooski Environment Stormwater with current information.	Document the number of contacts and feedback received by the webmaster.
3-2	Develop school materials and teacher trainings	Draft materials and curricula
1-3	Participate in regional stormwater education program.	The success of the regional program will be based on statistically valid pre and post surveys of citizen behavior.
2-3	Maintain website on Winooski Environment Stormwater with current information.	Document the number of contacts and feedback received by the webmaster.
3-3	Develop school materials and teacher trainings	Draft materials and curricula
1-4	Participate in regional stormwater education program.	The success of the regional program will be based on statistically valid pre and post surveys of citizen behavior.
2-4	Maintain website on Winooski Environment Stormwater with current information.	Document the number of contacts and feedback received by the webmaster.
3-4	Implement school materials and teacher trainings	Engage Schools
1-5	Participate in regional stormwater education program.	The success of the regional program will be based on statistically valid pre and post surveys of citizen behavior.
2-5	Maintain website on Winooski Environment Stormwater with current information	Document the number of contacts and feedback received by the webmaster.
3-5	Implement school materials and teacher trainings	Measured by the number of classrooms introduced to stormwater quality curriculum.

2. Public Involvement/Participation

Rationale. The best management practices in Table 5 are selected for this minimum control measure to comply with the permit requirements. The City plans to implement a public/involvement program with individual BMPs, measurable goals, and responsible party for the program. The rationale is described in the following narrative.

TABLE 5
Public Involvement/Participation
Selected Best Management Practices

ID #	Corresponding State BMP ID from NOI	Best Management Practice (BMP)
1	2-9	Participate in a regional stormwater public involvement and participation program.

Public notification of the Notice of Intent is posted at City Hall for public viewing. All notices regarding this permit will comply with the State and Local public notice requirements. An overview of the Phase II requirements was presented to the City Council and interested citizens.

In 2011 the City joined the Chittenden County Stream Team, a regional effort to provide public involvement and participation in stormwater efforts across the county.

The City will post this SWMP, the annual reports and other relevant documents in a timely fashion on the City's stormwater website.

The responsible party for the program is identified on the implementation plan.

Implementation Plan. The implementation schedule for the BMP is provided in Table 6, and includes the designation of the responsible party.

Measurable Goals. The measurable goal the BMP was selected to evaluate the success of this minimum control measure and is described in Table 7.

TABLE 6
Public Involvement/Participation
Implementation Schedule

Schedule	ID # - Year ¹	Best Management Practice	Responsible Party
Year 1	1-1	Participate in Chittenden County Stream Team.	Wastewater Superintendent
Year 2	1-2	Participate in Chittenden County Stream Team.	Wastewater Superintendent
Year 3	1-3	Participate in Chittenden County Stream Team.	Wastewater Superintendent
Year 4	1-4	Participate in Chittenden County Stream Team.	Wastewater Superintendent
Year 5	1-5	Participate in Chittenden County Stream Team.	Wastewater Superintendent

Notes:

1. The first digit of the ID # represents the BMP number and the second digit represents the year.

TABLE 7
Public Involvement/Participation
Measurable Goals

ID # - Year	Best Management Practice	Measurable Goal
1-1	Participate in Chittenden County Stream Team.	Document public participation in Stream Team programs.
1-2	Participate in Chittenden County Stream Team.	Document public participation in Stream Team programs.
1-3	Participate in Chittenden County Stream Team.	Document public participation in Stream Team programs.
1-4	Participate in Chittenden County Stream Team.	Document public participation in Stream Team programs.
1-5	Participate in Chittenden County Stream Team.	Document public participation in Stream Team programs.

3. Illicit Discharge Detection and Elimination

Rationale. The best management practices listed in Table 8 are selected for this minimum control measure to comply with the permit requirements. The City plans to continue an overall illicit discharge detection and elimination program with individual BMPs, measurable goals, and responsible party for the program. The rationale is described in the following narratives.

TABLE 8
Illicit Discharge Detection and Elimination
Selected Best Management Practices

ID #	Corresponding State BMP ID from NOI	Best Management Practice (BMP)
1	3-2	Update the stormwater system mapping
2	3-1,4,5,6,7	Continue monitoring program to detect and eliminate non-storm water discharges and implement corrective actions
3	3-3	Enforce the ordinance to address illicit discharge connections

Grassroots GIS created the City storm sewer map through a grant received from the Metropolitan Planning Organization. In developing the map, extensive field work as well as documenting locations using global positioning system (gps) was completed. City staff supplemented the field work to verify data and inventory manholes.

The City adopted the Stormwater Ordinance in 2007, which included a section that addresses IDDE.

The existing plan for identification of illicit discharges is to notify the owner of the violation, provide a timeframe for correction, and follow-up to ensure corrective actions were taken. This program is implemented city-wide and includes discharges from illegal dumping and spills.

In 2012, the City replaced the stormwater system along West Canal Street. This was thought to be at risk to illicit discharges due to its age and proximity to the Winooski River. The work included the replacement of a failing outfall and addition of a swirl separator.

The City has also participated with EPA on the DNA & E. Coli study (circa 2000) during which extensive sampling of major outfalls was completed. Since that time, the City has prioritized the worst of these outfalls and have identified and or eliminated illegal connections. The City has implemented an aggressive plan to eliminate these illegal connections and has provided support and training to other communities in this area. This plan has been very successful and the technique followed is:

- The outfalls are initially screened.
- Optical brightener testing on dry weather flows is performed.

- Positive tests are pursued by process of elimination and investigated with the television camera.

The program effectiveness is evaluated by how many illicit discharge connections are identified and eliminated. The storm drain outfalls are retested to measure success by lowering E. coli counts and negative Optical Brightener results.

The City has informed the public employees, businesses, and general public of the Ordinance and provides updates on the City website. Training of employees is described under minimum control measure 6.

The management and implementation of the program is the responsibility of the Wastewater Superintendent. An annual status report of the IDDE monitoring activities conducted and corrective actions will be submitted to the Agency as part of the MS4 annual report. This report will be organized to address specific categories of illicit discharges.

Implementation Plan. The implementation schedule for each BMP is provided in Table 9, and includes the designation of the responsible party.

Measurable Goals. The measurable goals for each BMP were selected to evaluate the success of this minimum control measure and are described in Table 10.

TABLE 9
Illicit Discharge Detection and Elimination
Implementation Schedule

Schedule	ID # - Year ¹	Best Management Practice	Responsible Party
Year 1	1-1	Update stormwater system mapping	Grassroots GIS
	2-1	Continue IDDE monitoring program in MS4 and document corrective actions	Wastewater Superintendent
	3-1	Enforce the ordinance to address illegal discharges	City Planner
Year 2	1-2	Update stormwater system mapping	Grassroots GIS
	2-2	Continue IDDE monitoring program in MS4 and document corrective actions	Wastewater Superintendent
	3-2	Enforce the ordinance to address illegal discharges	City Planner
Year 3	1-3	Update stormwater system mapping	Grassroots GIS
	2-3	Continue IDDE monitoring program in MS4 and document corrective actions	Wastewater Superintendent
	3-3	Enforce the ordinance to address illegal discharges	City Planner
Year 4	1-4	Update stormwater system mapping	Grassroots GIS
	2-4	Continue IDDE monitoring program in MS4 and document corrective actions	Wastewater Superintendent
	3-4	Enforce the ordinance to address illegal discharges	City Planner
Year 5	1-5	Update stormwater system mapping	Grassroots GIS
	2-5	Continue IDDE monitoring program in MS4 and document corrective actions	Wastewater Superintendent
	3-5	Enforce the ordinance to address illegal discharges	City Planner

Notes:

1. The first digit of the ID # represents the BMP number and the second digit represents the year.

TABLE 10
Illicit Discharge Detection and Elimination
Measurable Goals

ID # - Year	Best Management Practice	Measurable Goal
1-1	Update stormwater system mapping	Complete annual update of mapping.
2-1	Continue IDDE monitoring program in MS4 and document corrective actions	Document illicit discharges detected, report illicit discharges to Agency in annual report, inform public of illicit discharge and disposal hazards via website and public notice as necessary.
3-1	Enforce the ordinance to address illegal discharge connections	Ordinance is enforced to eliminate illicit discharge connections.
1-2	Update stormwater system mapping.	Complete annual update of mapping.
2-2	Continue IDDE monitoring program in MS4 and document corrective actions	Document illicit discharges detected, report illicit discharges to Agency in annual report, inform public of illicit discharge and disposal hazards via website and public notice as necessary.
3-2	Enforce the ordinance to address illegal discharge connections	Ordinance is enforced to eliminate illicit discharge connections.
1-3	Update stormwater system mapping.	Complete annual update of mapping.
2-3	Continue IDDE monitoring program in MS4 and document corrective actions	Document illicit discharges detected, report illicit discharges to Agency in annual report, inform public of illicit discharge and disposal hazards via website and public notice as necessary.
3-3	Enforce the ordinance to address illegal discharge connections	Ordinance is enforced to eliminate illicit discharge connections.
1-4	Update stormwater system mapping.	Complete annual update of mapping.
2-4	Continue IDDE monitoring program in MS4 and document corrective actions	Document illicit discharges detected, report illicit discharges to Agency in annual report, inform public of illicit discharge and disposal hazards via website and public notice as necessary.
3-4	Enforce the ordinance to address illegal discharge connections	Ordinance is enforced to eliminate illicit discharge connections.
1-5	Update stormwater system mapping.	Complete annual update of mapping.
2-5	Continue IDDE monitoring program in MS4 and document corrective actions	Document illicit discharges detected, report illicit discharges to Agency in annual report, inform public of illicit discharge and disposal hazards via website and public notice as necessary.
3-5	Enforce the ordinance to address illegal discharge connections	Ordinance is enforced to eliminate illicit discharge connections.

4. Construction Site Storm Water Runoff Control

Rationale. The best management practices in Table 11 are selected for this minimum control measure to comply with the permit requirements. The City qualifies for regulation of stormwater runoff from construction activities under the State general permit for disturbance greater than or equal to one acre. The City has reviewed existing policies and adopted a Stormwater Ordinance in 2007 to address erosion and sediment controls at construction sites, which is as stringent as the Agency's.

An overall construction site storm water control program with individual BMPs, measurable goals, and responsible party has been implemented to regulate development not subject to state permitting. The program includes an erosion and sediment control checklist to be filled out when the zoning department issues small construction permits.

TABLE 11
Construction Site Storm Water Runoff Control
Selected Best Management Practices

ID #	Corresponding State BMP ID from NOI	Best Management Practice (BMP)
1	4-1	Properly permit City construction activities
2	4-2,2a,2b	Enforce the erosion and sediment control ordinance

Implementation Plan. The implementation schedule for each BMP is provided in Table 12, and includes the designation of the responsible party.

Measurable Goals. The measurable goals for each BMP were selected to evaluate the success of this minimum control measure and are described in Table 13.

TABLE 12
Construction Site Storm Water Runoff Control
Implementation Schedule

Schedule	ID # - Year ¹	Best Management Practice	Responsible Party
Year 1	1-1	Properly permit City construction activities	City Manager
	2-1	Enforce the erosion and sediment control ordinance	City Planner
Year 2	1-2	Properly permit City construction activities	City Manager
	2-2	Enforce the erosion and sediment control ordinance	City Planner
Year 3	1-3	Properly permit City construction activities	City Manager
	2-3	Enforce the erosion and sediment control ordinance	City Planner
Year 4	1-4	Properly permit City construction activities	City Manager
	2-4	Enforce the erosion and sediment control ordinance	City Planner
Year 5	1-5	Properly permit City construction activities	City Manager
	2-5	Enforce the erosion and sediment control ordinance	City Planner

TABLE 13
Construction Site Storm Water Runoff Control
Measurable Goals

ID # - Year	Best Management Practice	Measurable Goal
1-1	Properly permit City construction activities	Comply with State permit requirements for City construction activities.
2-1	Enforce the erosion and sediment control ordinance	The number of stormwater ordinance violations for construction erosion control and enforcement actions.
1-2	Properly permit City construction activities	Comply with State permit requirements for City construction activities.
2-2	Enforce the erosion and sediment control ordinance	The number of stormwater ordinance violations for construction erosion control and enforcement actions.
1-3	Properly permit City construction activities	Comply with State permit requirements for City construction activities.
2-3	Enforce the erosion and sediment control ordinance	The number of stormwater ordinance violations for construction erosion control and enforcement actions.
1-4	Properly permit City construction activities	Comply with State permit requirements for City construction activities.
2-4	Enforce the erosion and sediment control ordinance	The number of stormwater ordinance violations for construction erosion control and enforcement actions.
1-5	Properly permit City construction activities	Comply with State permit requirements for City construction activities.
2-5	Enforce the erosion and sediment control ordinance	The number of stormwater ordinance violations for construction erosion control and enforcement actions.

5. **Post-Construction Storm Water Management in New Development and Redevelopment**

Rationale. The best management practices in Table 14 are selected for this minimum control measure to comply with the General Permit requirements. The City has developed a post construction storm water management program with individual BMPs, measurable goals, and responsible party.

The City has reviewed existing policies and adopted a Stormwater Ordinance in 2007 to address post-construction runoff from new developments and redevelopments that result in a land disturbance of greater than or equal to one acre and that are not subject to the State's post-construction stormwater management permit program. This stormwater ordinance addresses the post-construction stormwater management and has requirements that complement the requirements of the State.

In the ordinance, the City has developed requirements to ensure the long-term operation and maintenance of the BMPs to comply with the requirements of this minimum control measure.

The City has developed procedures for site inspection and enforcement to address post-construction runoff from new developments and redevelopments that result in land disturbance of greater than or equal to one acre and that are not subject so the State's post-construction stormwater permit program.

The City will assess whether additional policies and regulation are necessary in order to support low impact design, including limiting impervious surfaces in street and parking lot design. Impervious surface minimization is currently addressed in several locations within the Winooski Municipal Development Plan under "Proposed Land Use" as noted in Section IV.C.2.

TABLE 14
Post-Construction Storm Water Management in
New Development and Redevelopment
Selected Best Management Practices

ID #	Corresponding State BMP ID from NOI	Best Management Practice (BMP)
1	5-5	Properly permit new City development and redevelopment projects.
2	5-1,1c,2,3,4	Enforce the ordinance for stormwater runoff from new development and redevelopment projects that disturb greater than or equal to 1 acre and are not subject to the State post-construction stormwater management permit program.
3	5-1a	Review existing City policies, regulations, and ordinances to assess whether changes can be made to support low impact design options and adopt requirements that are at least as stringent as state requirements.
4	5-1b	Assess regulations to minimize impervious surface through street & parking lot design and adopt requirements that are at least as stringent as state requirements.

Implementation Plan. The implementation schedule for each BMP is provided in Table 15, and includes the designation of the responsible party.

Measurable Goals. The measurable goals for each BMP were selected to evaluate the success of this minimum control measure and are described in Table 16.

TABLE 15
Post-Construction Storm Water Management in
New Development and Redevelopment
Implementation Schedule

Schedule	ID # - Year¹	Best Management Practice	Responsible Party
Year 1	1-1	Properly permit City new development and redevelopment projects.	City Manager
	2-1	Enforce the ordinance for stormwater runoff from new development and redevelopment projects that disturb greater than or equal to 1 acre and are not subject to the State post-construction stormwater management permit program.	City Planner
Year 2	1-2	Properly permit City new development and redevelopment projects.	City Manager
	2-2	Enforce the ordinance for stormwater runoff from new development and redevelopment projects that disturb greater than or equal to 1 acre and are not subject to the State post-construction stormwater management permit program.	City Planner
Year 3	1-3	Properly permit City new development and redevelopment projects.	City Manager
	2-3	Enforce the ordinance for stormwater runoff from new development and redevelopment projects that disturb greater than or equal to 1 acre and are not subject to the State post-construction stormwater management permit program.	City Planner
	3-3	Review existing City policies, regulations, and ordinances to assess whether changes can be made to support low impact design options.	City Planner
	4-3	Assess regulations to minimize impervious surface through street & parking lot design.	City Planner

TABLE 15 (Continued)
Post-Construction Storm Water Management in
New Development and Redevelopment
Implementation Schedule

Schedule	ID # - Year¹	Best Management Practice	Responsible Party
Year 4	1-4	Properly permit City new development and redevelopment projects.	City Manager
	2-4	Enforce the ordinance for stormwater runoff from new development and redevelopment projects that disturb greater than or equal to 1 acre and are not subject to the State post-construction stormwater management permit program.	City Planner
	3-4	Adopt recommended requirements to support low impact design requirements that are at least as stringent as state requirements.	City Planner
	4-4	Adopt recommended requirements to minimize impervious surface through street & parking lot design that are at least as stringent as state requirements.	City Planner
Year 5	1-5	Properly permit City new development and redevelopment projects.	City Manager
	2-5	Enforce the ordinance for stormwater runoff from new development and redevelopment projects that disturb greater than or equal to 1 acre and are not subject to the State post-construction stormwater management permit program.	City Planner
	3-5	Enforce low impact design requirements.	City Planner
	4-5	Enforce regulations to minimize impervious surface through street & parking lot design.	City Planner

Notes:

1. The first digit of the ID # represents the BMP number and the second digit represents the year.

TABLE 16
Post-Construction Storm Water Management in
New Development and Redevelopment
Measurable Goals

ID # - Year	Best Management Practice	Measurable Goal
1-1	Properly permit City new development and redevelopment projects.	Comply with State permit requirements for City projects.
2-1	Enforce the ordinance for stormwater runoff from new development and redevelopment projects that disturb greater than or equal to 1 acre and are not subject to the State post-construction stormwater management permit program.	The number of stormwater ordinance violations for post stormwater management and enforcement actions.
1-2	Properly permit City new development and redevelopment projects.	Comply with State permit requirements for City projects.
2-2	Enforce the ordinance for stormwater runoff from new development and redevelopment projects that disturb greater than or equal to 1 acre and are not subject to the State post-construction stormwater management permit program.	The number of stormwater ordinance violations for post stormwater management and enforcement actions.
1-3	Properly permit City new development and redevelopment projects.	Comply with State permit requirements for City projects.
2-3	Enforce the ordinance for stormwater runoff from new development and redevelopment projects that disturb greater than or equal to 1 acre and are not subject to the State post-construction stormwater management permit program.	The number of stormwater ordinance violations for post stormwater management and enforcement actions.
3-3	Review existing City policies, regulations, and ordinances to assess whether changes can be made to support low impact design options.	Report recommending improvements to regulations.
4-3	Assess regulations to minimize impervious surface through street & parking lot design.	Report recommending improvements to regulations.

TABLE 16 (Continued)
Post-Construction Storm Water Management in
New Development and Redevelopment
Measurable Goal

ID #	Best Management Practice	Measurable Goal
1-4	Properly permit City new development and redevelopment projects.	Comply with State permit requirements for City projects.
2-4	Enforce the ordinance for stormwater runoff from new development and redevelopment projects that disturb greater than or equal to 1 acre and are not subject to the State post-construction stormwater management permit program.	The number of stormwater ordinance violations for post stormwater management and enforcement actions.
3-4	Adopt recommended requirements to support low impact design requirements that are at least as stringent as state requirements.	Adoption of recommended improvements to policy, regulation, and ordinances.
4-4	Adopt recommended requirements to minimize impervious surface through street & parking lot design that are at least as stringent as state requirements.	Adoption of recommended improvements to policy, regulation, and ordinances.
1-5	Properly permit City new development and redevelopment projects.	Comply with State permit requirements for City projects.
2-5	Enforce the ordinance for stormwater runoff from new development and redevelopment projects that disturb greater than or equal to 1 acre and are not subject to the State post-construction stormwater management permit program.	The number of stormwater ordinance violations for post stormwater management and enforcement actions.
3-5	Enforce low impact design requirements.	Implementation of design requirements in new development.
4-5	Enforce regulations to minimize impervious surface through street & parking lot design.	Implementation of design requirements in new development.

6. Pollution Prevention/Good Housekeeping for Municipal Operations

Rationale. The best management practices in Table 17 are selected for this minimum control measure to comply with the permit requirements. The City has a pollution prevention/good housekeeping program for municipal operations with individual BMPs, measurable goals, and responsible party.

The Wastewater Pollution Control Facility (WPCF) is subject to the Multi-Sector General Permit (MSGP) and the City submitted a Notice of Intent (NOI) based on a Certificate of No Exposure. The permit is #4441-9003.

The Department of Public Works (DPW) and Wastewater Pollution Control Facility (WPCF) have requested a survey of facilities from the Municipal Compliance Assistance Program (MCAP) and will continue to stay involved in this program. There are emergency spill kits located at each facility. All chemicals and fuels are stored inside and in contained areas to minimize spills.

Municipally owned catch basins, streets, and parking lots are routinely cleaned. Materials not suitable for fill are deposited at the WPCF on the drying beds until enough material is accumulated. A contractor removes the accumulated material to be landfilled. Catch basin filters have been installed in several basins within the City. These filters are cleaned on a regular basis and the filters replaced as needed. Snow piles are temporarily stored at the WPCF in an area surrounded by a berm so that melt water does not directly drain into the Winooski River.

The City purchased a new street sweeper in 2004. This regenerative air type sweeper picks up fine particulates from the street. Sweeping is ongoing from spring through fall, and the entire 38 miles of street are typically swept at least 4 times per year. High priority areas such as Malletts Bay Avenue are swept on a more frequent basis. In 2011, the City purchased a replacement 9 yard jetter/vac truck manufactured by Vactor to clean storm sewer pipes and catch basins. A remote CCTV tractor camera and CCTV stick camera were also purchased to inspect the condition of underground pipes and investigate illicit discharges.

The City staff has stopped the use of fertilizers containing phosphorus for all municipal facilities where fertilizers are applied.

TABLE 17
Pollution Prevention/Good Housekeeping for Municipal Operations
Selected Best Management Practices

ID #	Corresponding State BMP ID from NOI	Best Management Practice (BMP)
1	6-1b	Inspect and clean catch basins.
2	6-1c	Train all public works staff (wastewater, streets, and parks)
3	6-2	Participate in Municipal Compliance Assistance Program (MCAP)
4	6-1b	Sweep City streets.

Implementation Plan. The implementation schedule for each BMP is provided in Table 18, and includes the designation of the responsible party.

Measurable Goals. The measurable goals for each BMP were selected to evaluate the success of this minimum control measure and are described in Table 19.

TABLE 18
Pollution Prevention/Good Housekeeping for Municipal Operations
Implementation Schedule

Schedule	ID # - Year¹	Best Management Practice	Responsible Party
Year 1	1-1	Inspect and clean catch basins.	Public Works Director
	2-1	Train City staff.	PW Director/RSEP Municipal Training Workshops
	3-1	Participate in Municipal Compliance Assistance Program	Public Works Director
	4-1	Sweep City streets in spring and fall.	Public Works Director
Year 2	1-2	Inspect and clean catch basins.	Public Works Director
	2-2	Train City staff.	PW Director/RSEP Municipal Training Workshops
	3-2	Participate in Municipal Compliance Assistance Program	Public Works Director
	4-2	Sweep City streets in spring and fall.	Public Works Director
Year 3	1-3	Inspect and clean catch basins.	Public Works Director
	2-3	Train City staff.	PW Director/RSEP Municipal Training Workshops
	3-3	Participate in Municipal Compliance Assistance Program	Public Works Director
	4-3	Sweep City streets in spring and fall.	Public Works Director
Year 4	1-4	Inspect and clean catch basins.	Public Works Director
	2-4	Train City staff.	PW Director/RSEP Municipal Training Workshops
	3-4	Participate in Municipal Compliance Assistance Program	Public Works Director
	4-4	Sweep City streets in spring and fall.	Public Works Director
Year 5	1-5	Inspect and clean catch basins.	Public Works Director
	2-5	Train City staff.	PW Director/RSEP Municipal Training Workshops
	3-5	Participate in Municipal Compliance Assistance Program	Public Works Director
	4-5	Sweep City streets in spring and fall.	Public Works Director

TABLE 19
Pollution Prevention/Good Housekeeping for Municipal Operations
Measurable Goals

ID # - Year	Best Management Practice	Measurable Goals
1-1	Inspect and clean catch basins.	Document number of catch basins cleaned and volume of material removed. As a minimum, complete 20% of basins annually.
2-1	Train City staff.	Document topics and number of employees trained.
3-1	Participate in Municipal Compliance Assistance Program	Maintain participation in MCAP.
4-1	Sweep City streets in spring and fall.	Document street sweeping schedule and volumes of material removed.
1-2	Inspect and clean catch basins.	Document number of catch basins cleaned and volume of material removed. As a minimum, complete 20% of basins annually.
2-2	Train City staff.	Document topics and number of employees trained.
3-2	Participate in Municipal Compliance Assistance Program	Maintain participation in MCAP.
4-2	Sweep City streets in spring and fall.	Document street sweeping schedule and volumes of material removed.
1-3	Inspect and clean catch basins.	Document number of catch basins cleaned and volume of material removed. As a minimum, complete 20% of basins annually.
2-3	Train City staff.	Document topics and number of employees trained.
3-3	Participate in Municipal Compliance Assistance Program	Maintain participation in MCAP.
4-3	Sweep City streets in spring and fall.	Document street sweeping schedule and volumes of material removed.

TABLE 19 (Continued)
Pollution Prevention/Good Housekeeping for Municipal Operations
Measurable Goals

ID # - Year	Best Management Practice	Measurable Goals
1-4	Inspect and clean catch basins.	Document number of catch basins cleaned and volume of material removed. As a minimum, complete 20% of basins annually.
2-4	Train City staff.	Document topics and number of employees trained.
3-4	Participate in Municipal Compliance Assistance Program	Maintain participation in MCAP.
4-4	Sweep City streets in spring and fall.	Document street sweeping schedule and volumes of material removed.
1-5	Inspect and clean catch basins.	Document number of catch basins cleaned and volume of material removed. As a minimum, complete 20% of basins annually.
2-5	Train City staff.	Document topics and number of employees trained.
3-5	Participate in Municipal Compliance Assistance Program	Maintain participation in MCAP.
4-5	Sweep City streets in spring and fall.	Document street sweeping schedule and volumes of material removed.

V. MONITORING, RECORD KEEPING, AND REPORTING

A. Monitoring

1. A permittee must evaluate program compliance, the appropriateness of identified best management practices, and progress toward achieving identified measurable goals.
2. When a permittee conducts monitoring of illicit discharges pursuant to Subpart IV.H.3.a.4. all samples and measurements taken shall be representative of the monitored activity.
3. Records of monitoring information shall include:
 - a) The date, exact place, and time of sampling or measurement;
 - b) The name(s) of the individual(s) who performed the sampling or measurements;
 - c) The date(s) analyses were performed;
 - d) The names of the individuals who performed the analyses;
 - e) The analytical techniques or methods used; and
 - f) The results of such analyses.
4. Discharge Monitoring Report. Monitoring results must be reported on a Discharge Monitoring Report (DMR).
5. The Agency may require a permittee on a case-by-case basis to undertake water quality monitoring at an individual stormwater discharge point if there is evidence of an unusual discharge or if it is necessary to verify the effectiveness of BMP's and other control measures in the permittee's SWMP.

B. Record Keeping

1. A permittee must retain records of all monitoring information, copies of all reports required by this permit, copies of Discharge Monitoring Reports (DMRs), a copy of the NPDES permit, and records of all data used to complete the application (NOI) for this permit, for a period of at least three years from the date of the sample, measurement, report or application, or for the term of permit, whichever is longer.
2. A permittee must submit records to the Secretary only when specifically asked to do so. It must retain a copy of the SWMP required by the permit at a location accessible to the Secretary. A permittee must make its records, including the notice of intent (NOI) and the copy of the SWMP, available to the public if requested to do so in writing.

C. Reporting

The City shall submit its annual reports (based on a calendar year from January 1 to December 31) to the VTDEC Watershed Management Division, Stormwater Management program by April 1 of each year. FRP reports may be included with the annual report when reporting deadlines coincide. In addition to any FRP reporting requirements, the report must include:

1. The status of the permittee's compliance with permit conditions, an assessment of the appropriateness of the identified best management practices, progress towards achieving implementation of BMPs necessary to meet TMDL requirements and progress towards achieving the statutory goal for the six minimum measures of reducing the discharge of pollutants to the MEP, and the measurable goals for each of the minimum control measures and TMDL implementation measures;
2. Results of information collected and analyzed, if any, during the reporting period, including monitoring data used to assess the success of the program at meeting TMDL requirements and the success of the six minimum measures.
3. A summary of the stormwater activities the permittee plans to undertake during the next reporting cycle (including an implementation schedule);
4. Proposed changes to the permittees' SWMP, including changes to any BMP's or any identified measurable goals that apply to the program elements; and
5. Notice that the permittee is relying on another government entity to satisfy some of its permit obligations (if applicable).

