

APPENDIX H**Requirements Related to Discharges to Certain Water Quality Limited Waterbodies****Table of Contents**

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Attachment 1- Nitrogen Reduction Credits For Selected Structural BMPs**I. Discharges to water quality limited waterbodies and their tributaries where nitrogen is the cause of the impairment**

- 1) Part 2.2.2.a.i. of the permit identifies the permittees subject to additional requirements to address nitrogen in their stormwater discharges because they discharge to waterbodies that are water quality limited due to nitrogen, or their tributaries, without an EPA approved TMDL. Permittees identified in Part 2.2.2.a.i of the permit must identify and implement BMPs designed to reduce nitrogen discharges. To address nitrogen discharges each permittee shall comply with the following requirements:

- a. Additional or Enhanced BMPs

- i. The permittee remains subject to all the requirements of Part 2.3. of the permit and shall include the following enhancements to the BMPs required by Part 2.3 of the permit:
 1. Part 2.3.2, The permittee shall supplement its Residential and Business/Commercial/Institution program with annual timed messages on specific topics. The permittee shall distribute an annual message in the spring (April/May) timeframe that encourages the proper use and disposal of grass clippings and encourages the proper use of slow-release fertilizers. The permittee shall distribute an annual message in the summer (June/July) timeframe encouraging the proper management of pet waste, including noting any existing ordinances where appropriate. The permittee shall distribute an annual message in the Fall (August/September/October) timeframe encouraging the proper disposal of leaf litter. The permittee shall deliver an annual message on each of

these topics, unless the permittee determines that one or more of these issues is not a significant contributor of nitrogen to discharges from the MS4 and the permittee retains documentation of this finding in the SWMP.

2. Part 2.3.6, Stormwater Management in New Development and Redevelopment: the requirement for adoption/amendment of the permittee's ordinance or other regulatory mechanism shall include a requirement that new development and redevelopment stormwater management BMPs be optimized for nitrogen removal; retrofit inventory and priority ranking under 2.3.6.1.b shall include consideration of BMPs to reduce nitrogen discharges.
3. Part 2.3.7, Good House Keeping and Pollution Prevention for Permittee Owned Operations: establish requirements for use of slow release fertilizers on permittee owned property currently using fertilizer, in addition to reducing and managing fertilizer use as provided in 2.3.7.1; establish procedures to properly manage grass cuttings and leaf litter on permittee property, including prohibiting blowing organic waste materials onto adjacent impervious surfaces; increased street sweeping frequency of all municipal owned streets and parking lots to a minimum of two times per year, once in the spring (following winter activities such as sanding) and at least once in the fall (following leaf fall).

b. Nitrogen Source Identification Report

- i. Within four years of the permit effective date the permittee shall complete a Nitrogen Source Identification Report. The report shall include the following elements:
 1. Calculation of total MS4 area draining to the water quality limited water segments or their tributaries, incorporating updated mapping of the MS4 and catchment delineations produced pursuant to Part 2.3.4.6,
 2. All screening and monitoring results pursuant to Part 2.3.4.7.d., targeting the receiving water segment(s)
 3. Impervious area and DCIA for the target catchment
 4. Identification, delineation and prioritization of potential catchments with high nitrogen loading
 5. Identification of potential retrofit opportunities or opportunities for the installation of structural BMPs during redevelopment of permittee-owned properties
- ii. The final Nitrogen Source Identification Report shall be submitted to EPA as part of the year 4 annual report.

c. Potential Structural BMPs

- i. Within five years of the permit effective date, the permittee shall evaluate all permittee-owned properties identified as presenting retrofit opportunities or areas for structural BMP installation under permit Part 2.3.6.d.ii. or identified in the Nitrogen Source Identification Report that are within the drainage area of the impaired water or its tributaries. The evaluation shall include:
 1. The next planned infrastructure, resurfacing or redevelopment activity planned for the property (if applicable) OR planned retrofit date;
 2. The estimated cost of redevelopment or retrofit BMPs; and
 3. The engineering and regulatory feasibility of redevelopment or retrofit BMPs.
 - ii. The permittee shall provide a listing of planned structural BMPs and a plan and schedule for implementation in the year 5 annual report. The permittee shall plan and install a minimum of one structural BMP as a demonstration project within the drainage area of the water quality limited water or its tributaries within six years of the permit effective date. The demonstration project shall be installed targeting a catchment with high nitrogen load potential. The permittee shall install the remainder of the structural BMPs in accordance with the plan and schedule provided in the year 5 annual report.
 - iii. Any structural BMPs listed in Table 4-2 of Attachment 1 to Appendix H installed in the regulated area by the permittee or its agents shall be tracked and the permittee shall estimate the nitrogen removal by the BMP consistent with Attachment 1 to Appendix H. The permittee shall document the BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated nitrogen removed in mass per year by the BMP in each annual report.
- 2) At any time, a permittee may submit information to EPA demonstrating that its discharge does not contain nitrogen by characterizing its discharge. Such demonstration must be documented through long term monitoring using the outfall characterization recommendations of the National Research Council. The National Research Council recommends a minimum of 30 flow weighted composite samples collected over the course of 2-3 years on a variety of storm sizes to characterize a discharge properly (http://www.epa.gov/npdes/pubs/nrc_stormwaterreport.pdf). A written request shall be sent to EPA summarizing the data collected and methods used to characterize each outfall's discharge. If EPA concurs that the discharge does not contain nitrogen, EPA will provide written concurrence to the permittee. Following written concurrence by EPA, the permittee is relieved of the requirements of Appendix H Part I as of the date of EPA's written concurrence and such concurrence shall be retained as part of the permittee's SWMP.

II. Discharges to water quality limited waterbodies and their tributaries where phosphorus is the cause of the impairment

- 1) Part 2.2.2.b.i. of the permit identifies the permittees subject to additional requirements to address phosphorus in their stormwater discharges because they discharge to waterbodies that are water quality limited due to phosphorus, or their tributaries, without an EPA approved TMDL. Permittees identified in Part 2.2.2.b.i. of the permit must identify and implement BMPs designed to reduce phosphorus discharges. To address phosphorus discharges each permittee shall comply with the following requirements:
 - a. Additional or Enhanced BMPs
 - i. The permittee remains subject to the requirements of Part 2.3. of the permit and shall include the following enhancements to the BMPs required by Part 2.3 of the permit:
 1. Part 2.3.2, Public education and outreach: The permittee shall supplement its Residential and Business/Commercial/Institution program with annual timed messages on specific topics. The permittee shall distribute an annual message in the spring (March/April) timeframe that encourages the proper use and disposal of grass clippings and encourages the proper use of slow-release and phosphorous-free fertilizers. The permittee shall distribute an annual message in the summer (June/July) timeframe encouraging the proper management of pet waste, including noting any existing ordinances where appropriate. The permittee shall distribute an annual message in the fall (August/September/October) timeframe encouraging the proper disposal of leaf litter. The permittee shall deliver an annual message on each of these topics, unless the permittee determines that one or more of these issues is not a significant contributor of phosphorous to discharges from the MS4 and the permittee retains documentation of this finding in the SWMP.
 2. Part 2.3.6, Stormwater Management in New Development and Redevelopment: the requirement for adoption/amendment of the permittee's ordinance or other regulatory mechanism shall include a requirement that new development and redevelopment stormwater management BMPs be optimized for phosphorus removal; retrofit inventory and priority ranking under 2.3.6.1.b shall include consideration of BMPs that infiltrate stormwater where feasible.
 3. Part 2.3.7, Good House Keeping and Pollution Prevention for Permittee Owned Operations: Establish procedures to properly manage grass cuttings and leaf litter on permittee property, including prohibiting blowing organic waste materials onto adjacent impervious surfaces; increased street sweeping frequency of all municipal owned streets and parking lots to a minimum of two times per year, once in the spring (following winter activities such as sanding) and at least once in the fall (following leaf fall).
 - b. Phosphorus Source Identification Report

- i. Within four years of the permit effective date the permittee shall complete a Phosphorus Source Identification Report. The report shall include the following elements:
 - 1. Calculation of total MS4 area draining to the water quality limited receiving water segments or their tributaries, incorporating updated mapping of the MS4 and catchment delineations produced pursuant to Part 2.3.4.6,
 - 2. All screening and monitoring results pursuant to Part 2.3.4.7.d., targeting the receiving water segment(s)
 - 3. Impervious area and DCIA for the target catchment
 - 4. Identification, delineation and prioritization of potential catchments with high phosphorus loading
 - 5. Identification of potential retrofit opportunities or opportunities for the installation of structural BMPs during redevelopment, including the removal of impervious area of permittee-owned properties
 - ii. The phosphorus source identification report shall be submitted to EPA as part of the year 4 annual report.
- c. Potential Structural BMPs
- i. Within five years of the permit effective date, the permittee shall evaluate all permittee-owned properties identified as presenting retrofit opportunities or areas for structural BMP installation under permit Part 2.3.6.d.ii or identified in the Phosphorus Source Identification Report that are within the drainage area of the water quality limited water or its tributaries. The evaluation shall include:
 - 1. The next planned infrastructure, resurfacing or redevelopment activity planned for the property (if applicable) OR planned retrofit date;
 - 2. The estimated cost of redevelopment or retrofit BMPs; and
 - 3. The engineering and regulatory feasibility of redevelopment or retrofit BMPs.
 - ii. The permittee shall provide a listing of planned structural BMPs and a plan and schedule for implementation in the year 5 annual report. The permittee shall plan and install a minimum of one structural BMP as a demonstration project within the drainage area of the water quality limited water or its tributaries within six years of the permit effective date. The demonstration project shall be installed targeting a catchment with high phosphorus load potential. The permittee shall install the remainder of the structural BMPs in accordance with the plan and schedule provided in the year 5 annual report.
 - iii. Any structural BMPs installed in the regulated area by the permittee or its agents shall be tracked and the permittee shall estimate the phosphorus removal

by the BMP consistent with Attachment 3 to Appendix F. The permittee shall document the BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated phosphorus removed in mass per year by the BMP in each annual report.

- 2) At any time, a permittee may submit information to EPA demonstrating that its discharge does not contain phosphorus by characterizing its discharge. Such demonstration must be documented through long term monitoring using the outfall characterization recommendations of the National Research Council. The National Research Council recommends a minimum of 30 flow weighted composite samples collected over the course of 2-3 years on a variety of storm sizes to characterize a discharge properly (http://www.epa.gov/npdes/pubs/nrc_stormwaterreport.pdf). A written request shall be sent to EPA summarizing the data collected and methods used to characterize each outfall's discharge. If EPA concurs that the discharge does not contain phosphorus, EPA will provide written concurrence to the permittee. Following written concurrence by EPA, the permittee is relieved of the requirements of Appendix H Part II as of the date of EPA's written concurrence and such concurrence shall be retained as part of the permittee's SWMP.

III. Discharges to water quality limited waterbodies where bacteria or pathogens is the cause of the impairment

- 1) Consistent with Part 2.2.2.c.i. of the permit, permittees that discharge to waterbodies that are water quality limited due to bacteria or pathogens, without an EPA approved TMDL, are subject to the following additional requirements to address bacteria or pathogens in their stormwater discharges.
- 2) Permittees discharging to a waterbody listed as impaired due to bacteria or pathogens in categories 5 and 4b on the most recent Massachusetts Integrated Report of waters listed pursuant to Clean Water Act sections 303(d) and 305(b) shall implement the Additional or Enhanced BMPs in Part III 4) below to reduce bacteria or pathogen discharges from their MS4.

Permittees that, during the permit term, become aware that their discharge is to a waterbody that is water quality limited due to bacteria or pathogens must eliminate the condition causing or contributing to the water quality limitation in the receiving waters within 60 days of becoming aware of the condition and document actions taken to eliminate the condition in its SWMP. If the permittee is unable to remove the condition causing or contributing to the water quality limitation the permittee shall implement BMPs designed to reduce bacteria or pathogen discharges as described in Part III) below.

- 3) Additional or Enhanced BMPs
 - i. The permittee remains subject to the requirements of Part 2.3. of the permit and shall include the following enhancements to the BMPs required by Part 2.3 of the permit:
 1. Part 2.3.3. Public Education: The permittee shall supplement its Residential program with an annual message encouraging the proper management of pet waste, including noting any existing ordinances where appropriate. The permittee or its agents shall disseminate educational materials to dog owners at the time of issuance or renewal of a dog license, or other appropriate time. Education materials shall describe the detrimental impacts of improper management of pet waste, requirements for waste collection and disposal, and penalties for non-compliance. The permittee shall also provide information to owners of septic systems about proper maintenance in any catchment that discharges to a water body impaired for bacteria or pathogens.
 2. Part 2.3.4 Illicit Discharge: The permittee shall implement the illicit discharge program required by this permit. Catchments draining to any waterbody impaired for bacteria or pathogens shall be designated either Problem Catchments or HIGH priority in implementation of the IDDE program.
- 4) At any time, a permittee may submit information to EPA demonstrating that its discharge does not contain bacteria or pathogens by characterizing its discharge. Such demonstration must be documented through long term monitoring using the outfall characterization recommendations

of the National Research Council. The National Research Council recommends a minimum of 30 flow weighted composite samples collected over the course of 2-3 years on a variety of storm sizes to characterize a discharge properly (http://www.epa.gov/npdes/pubs/nrc_stormwaterreport.pdf). A written request shall be sent to EPA summarizing the data collected and methods used to characterize each outfall's discharge. If EPA concurs that the discharge does not contain bacteria or pathogens, EPA will provide written concurrence to the permittee. Following written concurrence by EPA, the permittee is relieved of the requirements of Appendix H Part III as of the date of EPA's written concurrence and such concurrence shall be retained as part of the permittee's SWMP.

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IV. Discharges to water quality limited waterbodies where chloride is the cause of the impairment

- 1) Consistent with Part 2.2.2.c.i. of the permit, permittees that discharge to waterbodies that are water quality limited due to chloride, without an EPA approved TMDL, are subject to the following additional requirements to address chloride in their stormwater discharges.
- 2) Permittees discharging to a waterbody listed as impaired due to chloride in categories 5 or 4b on the Massachusetts Integrated Report of waters listed pursuant to Clean Water Act sections 303(d) and 305(b) shall develop a Salt Reduction Plan that includes specific actions designed to achieve salt reduction on municipal roads and facilities, and on private facilities that discharge to its MS4. The Salt Reduction Plan shall be completed within three years of the effective date of the permit and include the BMPs in Part IV 4) below. The Salt Reduction Plan shall be fully implemented five years after the effective date of the permit.
- 3) Permittees that, during the permit term, become aware that their discharge is to a waterbody that is impaired due to chloride must update their Salt Reduction Plan within 60 days of becoming aware of the situation to include salt reduction practices targeted at lowering chloride in discharges to the impaired waterbody. If the permittee does not have a Salt Reduction Plan already in place, then the permittee shall complete a Salt Reduction Plan that includes the BMPs in Part IV 4) below within 3 years of becoming aware of the situation and fully implement the Salt Reduction Plan within 5 years of becoming aware of the situation.
- 4) Additional or Enhanced BMPs
 - a. For municipally maintained surfaces:
 - i. Tracking of the types and amount of salt applied to all permittee owned and maintained surfaces and reporting of salt use beginning in the year of the completion of the Salt Reduction Plan in the permittee's annual reports;
 - ii. Planned activities for salt reduction on municipally owned and maintained surfaces, which shall include but are not limited to the following unless the permittee determines one or more of the following is not applicable to its system and documents that determination as part of the Salt Reduction Plan:
 - Operational changes such as pre-wetting, pre-treating the salt stockpile, increasing plowing prior to de-icing, monitoring of road surface temperature, etc.;
 - Implementation of new or modified equipment providing pre-wetting capability, better calibration rates, or other capability for minimizing salt use;
 - Training for municipal staff and/or contractors engaged in winter maintenance activities;
 - Adoption of guidelines for application rates for roads and parking lots (see *Winter Parking Lot and Sidewalk Maintenance Manual (Revised edition June 2008)*)

<http://www.pca.state.mn.us/publications/parkinglotmanual.pdf>;
and the application guidelines on page 17 of *Minnesota Snow
and Ice Control: Field Handbook for Snow Operators*
(September 2012)

<http://www.mnltap.umn.edu/publications/handbooks/documents/snowice.pdf> for examples);

- Regular calibration of spreading equipment;
- Designation of no-salt and/or low salt zones;
- Measures to prevent exposure of salt stockpiles (if any) to precipitation and runoff; and
- An estimate of the total tonnage of salt reduction expected by each activity.

b. For privately maintained facilities that discharge to the MS4:

- i. Establish an ordinance, bylaw, or other regulatory mechanism requiring measures to prevent exposure of any salt stockpiles to precipitation and runoff at all commercial and industrial properties within the regulated area.
- ii. Part 2.3.3. Public Education and Outreach: The permittee shall supplement its Commercial/Industrial education program with an annual message to private road salt applicators and commercial and industrial site owners on the proper storage and application rates of winter deicing material. The educational materials shall be disseminated in the November/December timeframe and shall describe steps that can be taken to minimize salt use and protect local waterbodies.
- iii. Part 2.3.6, Stormwater Management in New Development and Redevelopment – establish procedures and requirements to minimize salt usage and require the use of salt alternatives where the permittee deems necessary.

c. The completed Salt Reduction Plan shall be submitted to EPA along with the annual report following the Salt Reduction Plan's completion. Each subsequent annual report shall include an update on Plan implementation progress, any updates to the Salt Reduction Plan deemed necessary by the permittee, as well as the types and amount of salt applied to all permittee owned and maintained surfaces.

- 5) At any time, a permittee may submit information to EPA demonstrating that its discharge does not contain chloride by characterizing its discharge. Such demonstration must be documented through long term monitoring using the outfall characterization recommendations of the National Research Council. The National Research Council recommends a minimum of 30 flow weighted composite samples collected over the course of 2-3 years on a variety of storm sizes to characterize a discharge properly (http://www.epa.gov/npdes/pubs/nrc_stormwaterreport.pdf). For chloride, discharges should be characterized during the deicing season and capture discharges during deicing events. A written request shall be sent to EPA summarizing the data collected and methods used to characterize each outfall's discharge. If EPA concurs that the discharge does not contain

chloride, EPA will provide written concurrence to the permittee. Following written concurrence by EPA, the permittee is relieved of the requirements of Appendix H Part IV as of the date of EPA's written concurrence and such concurrence shall be retained as part of the permittee's SWMP.

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V. Discharges to water quality limited waterbodies and their tributaries where solids, oil and grease (hydrocarbons), or metals is the cause of the impairment

- 1) Consistent with Part 2.2.2.c.i. of the permit, permittees that discharge to waterbodies that are water quality limited due to solids, metals, or oil and grease (hydrocarbons), without an EPA approved TMDL, are subject to the following additional requirements to address solids, metals, or oil and grease (hydrocarbons) in their stormwater discharges.
- 2) Permittees discharging to a waterbody listed as impaired due to solids, metals or oil and grease (hydrocarbons) in categories 5 or 4b on the Massachusetts Integrated Report of waters listed pursuant to Clean Water Act sections 303(d) and 305(b) shall implement the Additional or Enhanced BMPs in Part V 4) below to reduce solids, metals or oil and grease (hydrocarbons) discharges from their MS4.
- 3) Permittees that, during the permit term, become aware that their discharge is to a waterbody that is water quality limited due to solids, metals or oil and grease (hydrocarbons) must eliminate the condition causing or contributing to the water quality limitation in the receiving waters within 60 days of becoming aware of the condition and document actions taken to eliminate the condition in its SWMP. If the permittee is unable to remove the condition causing or contributing to the water quality limitation the permittee shall implement BMPs designed to reduce solids, metals or oil and grease (hydrocarbons) discharges as described in Part V 4) below.
- 4) Additional or Enhanced BMPs
 - i. The permittee remains subject to the requirements of Part 2.3. of the permit and shall include the following enhancements to the BMPs required by Part 2.3 of the permit:
 1. Part 2.3.6, Stormwater Management in New Development and Redevelopment: stormwater management systems designed on commercial and industrial land use area draining to the water quality limited waterbody shall incorporate designs that allow for shutdown and containment where appropriate to isolate the system in the event of an emergency spill or other unexpected event. EPA also encourages the permittee to require any stormwater management system designed to infiltrate stormwater on commercial or industrial sites to provide the level of pollutant removal equal to or greater than the level of pollutant removal provided through the use of biofiltration of the same volume of runoff to be infiltrated, prior to infiltration.
 2. Part 2.3.7, Good House Keeping and Pollution Prevention for Permittee Owned Operations: increased street sweeping frequency of all municipal owned streets and parking lots to a schedule determined by the permittee to target areas with potential for high pollutant loads. This may include, but is not limited to, increased street sweeping frequency in commercial areas and high density residential areas, or drainage areas with a large amount of impervious area. Prioritize inspection and maintenance for catch basins to ensure that no sump shall be more than 50 percent full. Clean catch basins more frequently if inspection and maintenance

activities indicate excessive sediment or debris loadings. Each annual report shall include the street sweeping schedule determined by the permittee to target high pollutant loads.

- 5) At any time, a permittee may submit information to EPA demonstrating that its discharge does not contain solids, oil and grease (hydrocarbons) or metals (depending on which pollutant is relevant to the impairment) by characterizing its discharge. Such demonstration must be documented through long term monitoring using the outfall characterization recommendations of the National Research Council. The National Research Council recommends a minimum of 30 flow weighted composite samples collected over the course of 2-3 years on a variety of storm sizes to characterize a discharge properly (http://www.epa.gov/npdes/pubs/nrc_stormwaterreport.pdf). A written request shall be sent to EPA summarizing the data collected and methods used to characterize each outfall's discharge. If EPA concurs that the discharge does not contain solids, oil and grease (hydrocarbons) or metals, EPA will provide written concurrence to the permittee. Following written concurrence by EPA, the permittee is relieved of the requirements of Appendix H Part V as of the date of EPA's written concurrence and such concurrence shall be retained as part of the permittee's SWMP.