

## 8.2 Lake Champlain Phosphorus Control Plan (PCP) Requirements

- A. The permittee shall develop and implement a Phosphorus Control Plan (PCP), for approval by the Secretary, for developed land consistent with the Lake Champlain TMDLs.
1. At a minimum, the PCP shall be designed to achieve a level of phosphorus reduction equivalent to the percent reduction target for developed land in the associated TMDL lake segment(s) as applied to municipally-owned<sup>1</sup> developed lands. The percent reduction targets are included in Appendix A of this permit (See Table 8 of the Phosphorus TMDLs for Vermont Segments of Lake Champlain, June 17, 2016).
  2. The PCP may include the treatment of non-municipally-owned developed lands.
  3. The PCP may include, but is not limited to, reductions calculated from:
    - a) Implementation of the Municipal Road Standards (in Subpart 8.3),
    - b) Street sweeping and catch basin cleaning practices,
    - c) Retrofits to municipally owned properties,
    - d) Implementation of stormwater treatment practice upgrades or retrofits to treat existing impervious after the adoption of the 2002 Vermont State Stormwater Manual,
    - e) Implementation of stormwater treatment practices after July 1, 2010, on developed lands that are not subject to the state's operational stormwater permit.
    - f) Implementation of municipal ordinances or regulations to address sub-jurisdictional impervious surfaces.
  4. The following conditions apply when calculating phosphorus reductions for application towards the PCP targets:
    - a) Where a PCP includes phosphorus reductions from non-municipally-owned developed lands that are otherwise subject to an operational stormwater permit that requires an upgrade of the stormwater treatment system pursuant to the Department's regulations, including 3-acre sites, the PCP shall be designed to achieve, in aggregate, a level of phosphorus reduction equivalent to the lake segment target as applied to municipally-owned developed land, and a 50% reduction<sup>2</sup> from the non-municipally-owned developed lands. The MS4 shall assume full legal responsibility for the stormwater systems as per Part 7.
    - b) Where a PCP includes non-municipally-owned developed lands that are subject to an operational stormwater permit that does not otherwise require an upgrade of the stormwater system pursuant to the Department's regulations, the management of stormwater from these lands is creditable towards the phosphorus reduction target.

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<sup>1</sup> The term municipally-owned used in Part 8.2 includes developed lands owned by non-traditional MS4s.

<sup>2</sup> The 50% reduction target may change dependent on the standards adopted in the forthcoming Stormwater Rule.

The MS4 shall assume full legal responsibility for the stormwater systems as per Part 7.

- c) Where a PCP includes non-municipally-owned developed lands that are not otherwise subject to an operational stormwater permit, the management of stormwater from these lands is creditable towards the phosphorus reduction target. The MS4 shall establish a maintenance agreement with the property owner(s) to ensure long-term maintenance of the BMP(s). The maintenance agreement can be conditions in a local permit, or part of a municipally-approved plan.
  - d) The PCP may include a component to address a reduction of future growth discharges of phosphorus from developed lands. The future growth component shall track the amount of development, and the level of stormwater management achieved by local ordinances or regulations, on future development. Future development is any development after July 1, 2010 that is not subject to a state operational permit.
- B. The Secretary will evaluate the phosphorus reductions achieved through all of the developed lands regulatory tools to assess compliance, per lake segment, with the Lake Champlain TMDL reduction targets. This evaluation may result in the regulation of additional impervious surface to meet the phosphorus reduction requirements.
- C. The submissions of the Road Stormwater Implementation Table (Implementation Table) and the final PCP shall be placed on public notice pursuant to Subpart 3.8. Upon approval by the Secretary, these shall become a part of the permittee’s SWMP.
- D. Schedule of Compliance. The permittee shall complete implementation of the PCP no later than June 17, 2036.

The permittee shall, according to the following schedule:

April 1, 2019	- Submit the first Annual PCP Report
April 1, 2020	- Submit the Annual PCP Report and the Implementation Table with results of the Road Erosion Inventory (REI)
April 1, 2021	- Complete the Phosphorus Control Plan (PCP) and submit it to the Secretary - Submit the Annual PCP Report
April 1, 2022 and every year thereafter	- Submit Annual PCP Report
No later than June 17, 2036	- Complete full implementation of the approved PCP

- E. Pursuant to the foregoing table, the permittee shall submit a report every April 1<sup>st</sup> on the development and implementation of the PCP. The reports shall address actions taken to implement all PCP components, including:
1. Extent of implementation of the Municipal Roads Standards and any necessary updates to the Implementation Table,
  2. Extent of street sweeping and catch basin cleaning,
  3. Extent of stormwater BMP implementation,
  4. An estimate of the extent of remaining items requiring completion,
  5. An assessment of the ability to meet outstanding schedule items, and
  6. A written statement, signed by a designer acceptable to the Secretary, that any structural BMP built or implemented within the preceding six-month period was constructed in compliance with the approved plans.

### **8.3 Municipal Road Requirements**

#### **A. Road Erosion Inventory for all municipal hydrologically-connected road segments**

Each traditional municipality shall complete a Road Erosion Inventory (REI) of all hydrologically-connected road segments within the municipality. The REI is intended to verify which municipal road segments are hydrologically connected, and identify which of those segments meet the operational standards required under this permit. The municipal road segments are broken down into the following categories: Gravel and Paved Roads with Ditches, Paved Roads with Catch Basins, and Class 4 Roads.

Results of the REI shall be recorded in the Implementation Table and submitted by April 1, 2020. The REI forms can be found at:

<http://dec.vermont.gov/watershed/stormwater/permit-information-applications-fees/municipal-roads-program>

#### **1. Hydrologically-Connected Road Segment Determination**

The REI shall include all hydrologically-connected municipal road segments that appear on the ANR Atlas at the time that the REI is conducted. All hydrologically-connected road segments depicted on the ANR Atlas shall be field visited and evaluated using the REI Form. Additionally, the municipality may propose to add road segments from its REI based on an evaluation of the following criteria:

- a. For paved roads with catch basins: the catch basin outlet pipe is within 500 feet of a water of the State or wetland.
- b. For all other municipal roads:

- i. The municipal road segment is within 100 feet of a water of the State or wetland;
- ii. The municipal road segment bisects any water of the State or wetland, or a defined channel;
- iii. The municipal road segment is uphill from, and drains to, a municipal road that bisects a water of the State or wetland, and should be included in the REI to accurately capture the extent of the stormwater watershed.

If a road segment appears on the ANR Atlas and none of the above conditions are observed in the field, permittees may propose to re-classify a segment as not hydrologically connected. Alternately, if none of the above conditions are observed in the field, but the segment is likely to discharge to waters or wetlands, a permittee shall propose to add this segment to the inventory following a field evaluation.

The addition or removal of any road segments not appearing on the ANR Atlas must be documented as part of the REI, and justification for the removal or addition shall be included in the Implementation Table.

The Secretary may determine at any time that a road segment not identified on the ANR Atlas is hydrologically connected, based on the criteria listed above, as well as other site-specific factors that indicate the likelihood of a discharge, including slope, soil type, proximity to waters, etc. When the Secretary determines that an unmapped road segment is hydrologically connected and informs the municipality of its determination, the permittee shall include the segment in its Implementation Table as part of the next annual report.

## 2. Road Erosion Scoring

The REI shall include a road erosion “score” for each hydrologically-connected road segment. All road segments shall be scored as “Fully Meets,” “Partially Meets,” or “Does Not Meet” the standards listed in Subpart 8.3.C of this permit. A detailed procedure for scoring road segments is provided on the REI form. Road segments that score “Partially Meets” or “Does Not Meet” shall be upgraded to meet standards according to the municipality’s implementation schedule. Road segments that score “Fully Meets” do not require upgrades, but shall be maintained to ensure that they continue to meet standards. The REI scores and explanation of those scores shall be entered into the Implementation Table.

## B. Implementation Table

Municipalities shall record the REI scoring information in the Implementation Table. In the Implementation Table, the municipality shall prioritize road segments for upgrades to meet the standards in Subpart 8.3.C. The municipality shall submit the Implementation Table on April 1, 2020. The Table shall include the planned road upgrades for the first permit term period. The Implementation Table shall be the municipality’s working document to track planned road stormwater improvements and implementation. Municipalities shall update the table with the segments that were brought up to standards

in the previous year and segments planned for upgrades in the following calendar year as part of the Annual Report (Subpart 8.2.E). The Implementation Table is available on the Stormwater Program's website: <http://dec.vermont.gov/watershed/stormwater/permit-information-applications-fees/municipal-roads-program>

### C. Road Stormwater Management Standards

The standards listed below constitute the minimum required Best Management Practices (BMPs) applicable to all “hydrologically-connected” municipal roads. It is the municipality’s responsibility to maintain all practices after installation. Road segments not meeting these standards must implement the BMPs listed below in order to meet the required standards.

#### 1. Feasibility

Municipalities shall implement these standards to the extent feasible. A standard listed in Subpart 8.3 of this permit may be infeasible if it requires: the acquisition of additional state or federal permits<sup>3</sup> or noncompliance with such permits, or noncompliance with any other state or federal law; or requires the condemnation of private property; impacts to significant environmental and historic resources, including historic stone walls, historic structures, historic landscapes, or vegetation within 250 feet of a lakeshore; impacts to buried utilities; and excessive hydraulic hammering of ledge.

Municipalities shall document in the Implementation Table, for approval by the Secretary, each instance where feasibility affects implementation of the standards.

#### 2. Standards for All Construction and Soil Disturbing Activities

Following construction and soil disturbance on a hydrologically-connected road segment, all bare or unvegetated areas shall be revegetated with seed and mulch, hydroseeded, or stone lined within 5 days of disturbance of soils, or, if precipitation is forecast, sooner. Projects authorized under the Construction General Permit (CGP 3-9020) or Individual Construction Stormwater Permit (INDC) shall instead comply with the terms and conditions of that permit.

#### 3. Standards for Gravel and Paved Roads with Ditches

##### a. Baseline Standards for Gravel and Paved Roads with Ditches

The following are the required standards for all hydrologically-connected gravel and paved municipal road segments with drainage ditches, whether or not erosion is present. These standards also apply to all new construction and significant upgrades of stormwater treatment practices.

##### i. Roadway/Travel Lane Standards

##### (a) Roadway Crown

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<sup>3</sup> Self-verification under a non-reporting permit category does not constitute a permit for purposes of this section.

(i) Gravel roads shall be crowned, in or out-sloped:

Minimum: ¼” per foot

Recommended: ¼” – ½” per foot or 2% - 4%.

(ii) Paved/ditched roads shall be crowned during new construction, redevelopment, or repaving where repaving involves removal of the existing paving.

Minimum: 1/8” per foot or 1%

Recommended: 1% - 2%.

(b) Shoulder berms (also called Grader/Plow Berm/Windrows)

Shoulder berms shall be removed to allow precipitation to shed from the travel lane into the road drainage system. Roadway runoff shall flow in a distributed manner to the drainage ditch or filter area and there shall be no shoulder berms or evidence of a “secondary ditch.” Shoulder berms may remain in place if the road crown is in-sloped or out-sloped to the opposite side of the road from berm side of road. The shoulder berm standard only applies to gravel roads with drainage ditches.

ii. Road Drainage Standards

Roadway runoff shall flow in a distributed manner to grass or a forested area by lowering road shoulders or conversely by elevating the travel lane level above the shoulder. Road shoulders shall be lower than travel lane elevation. If distributed flow is not possible, roadway runoff may enter a drainage ditch, stabilized as follows:

(a) For roads with slopes between 0% and 5%: At a minimum, grass-lined ditch, no bare soil. Geotextile and erosion matting may be used instead of seed and mulch. Alternatively, ditches may be stabilized using any of the practices identified for roads with slopes 5% or greater included in Subpart (b), below.

Recommended shape: trapezoidal or parabolic cross section with mild side slopes; two foot horizontal per one foot vertical or flatter and 2 foot ditch depth.

(b) For roads with slopes 5% or greater but less than 8%:

(i) Stone-lined ditch: minimum 6”-8” minus stone or the equivalent for new practice construction. Recommended 2-foot ditch depth from top of stone-lined bottom,

(ii) Grass-lined ditch with stone check dams<sup>4</sup>, or

(iii) Grass-lined ditch if installed with disconnection practices such as cross culverts and/or turnouts to reduce road stormwater runoff volume. There shall be at least two cross culverts or turnouts per segment disconnecting

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<sup>4</sup> See Appendix B for check dam installation specifications.

road stormwater out of the road drainage network into vegetated areas, or spaced every 160'.

- (c) For roads with slopes of 8% or greater: Stone-lined ditch.
  - (i) For slopes greater than or equal to 8% but less than 10%: minimum 6"-8" minus stone or the equivalent for new construction. Recommended 2-foot ditch depth from top of stone-lined bottom.
  - (ii) For slopes greater than 10%: minimum 6-8" minus stone. Recommended 12" minus stone or the equivalent. Recommended 2-foot ditch depth from top of stone-lined bottom.
- (d) If appropriate, bioretention areas, level spreaders, armored shoulders, and sub-surface drainage practices may be substituted for the above road drainage standards.

### iii. Drainage Outlets to Waters & Turnouts

Roadway drainage shall be disconnected from waterbodies and defined channels, since the latter can act as a stormwater conveyance, and roadway drainage shall flow in a distributed manner to a grass or forested filter area. Drainage outlets and conveyance areas shall be stabilized as follows:

- (a) Turn-outs - all drainage ditches shall be turned out to avoid direct outlet to surface waters, whenever possible.
- (b) There must be adequate outlet protection at the end of the turnout, based upon slope ranges below. Turnout slopes shall be measured on the bank where the practice is located and not based on the road slope.
  - (i) For turnouts with slopes of 0% or greater but less than 5%: stabilize with grass at minimum. Alternatively, stabilize using the practices identified in (ii) or (iii), below.
  - (ii) For turnouts with slopes 5% or greater: stabilize with stone.
  - (iii) For slopes greater than 5% but less than 10%: minimum 6"-8" minus stone or the equivalent for new construction.
  - (iv) For slopes greater than 10%: minimum: 6-8" minus stone or equivalent for new construction. Recommended 12" minus stone or the equivalent.

### b. Standards if Rill or Gully Erosion is Present on Gravel and Paved Roads with Ditches

The following are the required standards for all gravel and paved roads with ditches where rill or gully erosion is present. These standards also apply to new construction and significant upgrades of stormwater treatment practices.

#### i. Municipal Culverts

- (a) Culvert end treatment or headwall required for areas with slopes 5% or greater, if erosion is due to absence of these structures. End treatment or headwall is required for new construction on slopes 5% or greater.

- (b) Stabilize outlet such that there will be no scour erosion, if erosion is due to absence or inadequacy of outlet stabilization. Stone aprons or plunge pools required for new construction on slopes 5% or greater.
  - (c) Upgrade to 18” culvert (minimum), if erosion is due to inadequate size or absence of structure. In some instances, intermittent streams enter the municipal road drainage network, and in these cases, the Secretary recommends culvert sizing based on in-field and mapping techniques described in the Intermittent Stream Crossing Sizing Guidance, found on the Stormwater Program’s website, at: <http://dec.vermont.gov/watershed/stormwater/permit-information-applications-fees/municipal-roads-program>.
  - (d) Drainage culverts conveying perennial waters are subject to coverage under the DEC Stream Alteration General Permit. Municipal road standards do not apply to culverts conveying perennial waters.
  - (e) A French Drain (also called an Under Drain) or French Mattress (also called a Rock Sandwich) sub-surface drainage practice may be substituted for a cross culvert.
- ii. Driveway Culverts within the municipal ROW
- (a) Culvert end treatment or headwall required for areas with slopes of 5% or greater, if erosion is due to absence of these structures. End treatment or headwall is required for new construction.
  - (b) Stabilize outlet such that there will be no scour erosion, if erosion is due to absence or inadequacy of outlet stabilization. Stone aprons or plunge pools required for new construction.
  - (c) Upgrade to minimum 15” culvert, 18” recommended, if erosion is due to inadequate size or absence of structure. In some instances, intermittent streams may enter the municipal road drainage network, and in these cases, the Secretary recommends culvert sizing based on in-field and mapping techniques described on the Stormwater Program’s website: <http://dec.vermont.gov/watershed/stormwater/permit-information-applications-fees/municipal-roads-program>.
  - (d) Driveway culverts conveying perennial waters are subject to coverage under the DEC Stream Alteration General Permit.

#### 4. Standards for Paved Roads with Catch Basins

Catch Basin Outlet Stabilization: All hydrologically-connected catch basin outlets shall be stabilized to eliminate all rill and gully erosion. Catch basin outlet stabilization practices include stone-lined ditches, stone aprons, check dams, and culvert header/headwalls.

## 5. Standards for Connected Class 4 Roads

Stabilize any areas of gully erosion identified in the REI with the practices described above or equivalent practices. Disconnection practices such as broad-based dips and water bars may replace cross culverts and turnouts.

## **PART 9: MONITORING, RECORD KEEPING, AND REPORTING**

### **9.1 Monitoring**

- A. When the permittee conducts monitoring of illicit discharges pursuant to Subpart 6.2.3, all records of monitoring information shall include:
  - 1. The date, exact place, and time of sampling or measurements;
  - 2. The names(s) of the individual(s) who performed the sampling or measurements;
  - 3. The date(s) analyses were performed;
  - 4. The names of the individuals who performed the analyses;
  - 5. The analytical techniques or methods used; and
  - 6. The results of such analyses.
- B. The Agency may require the 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 BMPs and other control measures in the permittee's SWMP.

### **9.2 Recordkeeping**

- A. The permittee shall retain all records required by this permit, including records of all monitoring information, copies of all reports required by this permit, a copy of its authorization and amended authorizations under this 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. This period may be extended by request of the Secretary at any time.
- B. The permittee shall submit its records to the Secretary when specifically asked to do so. It must retain a copy of the SWMP required by this permit, and a copy of the permit language, at a location accessible to the Secretary. The permittee shall make its records, including the NOI and SWMP, available to the public, if requested to do so in writing.

### **9.3 Annual Report**

The permittee shall submit an annual report that shall evaluate the permittee's compliance with the minimum control measures. The permittee shall submit its annual reports to the Department