



STORMWATER MANAGEMENT RULE

The Stormwater Management Section of the VTDEC has recently adopted the following new rule for the management of stormwater runoff in waters that are not principally impaired by stormwater runoff. An interactive map which depicts those waters where this rule does not apply is located on our stormwater webpage at:

http://www.vtwaterquality.org/stormwater/htm/sw_permitviewer.htm

A tabular listing of these waters is available at:

http://www.vtwaterquality.org/mapp/docs/mp_2008.303d_Final.pdf

The reviewer of this 303(d) listing should note that if the water is not listed with stormwater as the pollutant, then the following rule would apply.

The stormwater management rule is effective as of March 15, 2011 and replaces the 1997 Stormwater Management Procedures as the principle source of regulation for stormwater permitting in Vermont.

ENVIRONMENTAL PROTECTION RULES

CHAPTER 18

STORMWATER MANAGEMENT RULE

State of Vermont
Agency of Natural Resources
Department of Environmental Conservation

Water Quality Division
Stormwater Management Section
103 South Main Street – Building 10N
Waterbury, Vermont 05671-0408
(802) 241-3770

www.vtwaterquality.org/stormwater.htm

**STORMWATER MANAGEMENT RULE
TABLE OF CONTENTS**

Subchapter 1 – Purpose, Authority, Policy	5
§18-101 Purpose	5
§18-102 Authority	5
§18-103 Policy	5
Subchapter 2 - Definitions	6
§ 18-201 Definitions	6
Subchapter 3 – Applicability and Administration	9
§18-301 Applicability	9
§18-302 Permit Required	9
§18-303 Circumvention	10
§18-304 Exemptions	10
§18-305 Types of Permits and Authorizations to Discharge	12
§18-306 Permitting Standards for Discharges of Regulated Stormwater Runoff to Waters that are not Stormwater-Impaired Waters	13
§18-307 Stormwater Discharge General Permit	16
§18-308 Authorizations to Discharge Under a Stormwater Discharge General Permit	17
§18-309 Individual Stormwater Discharge Permits	23
§18-310 Compliance with Existing Permits	27
§18-311 Stormwater Utilities	27
§18-312 Validity of Permit and Authorization to Discharge; Recording in Land Records	28
§18-313 Enforcement	28
§18-314 Appeals	28
§18-315 Liability	28
Subchapter 4 Amendments to the Vermont Stormwater Management Manual	29
Section A - Amendments made to 4 th Printing	29
1.1.1 Water Quality Treatment Standard	29
1.1.2 Channel Protection Treatment Standard	29
1.1.3 Groundwater Recharge Treatment Standard	30
1.1.4 Overbank Flood Protection Treatment Standard	30
1.1.5 Extreme Flood Protection Treatment Standard	30
2.7.1.C. Pond Pretreatment	30
2.7.1.D Pond Treatment	31
2.7.1.E Pond Landscaping	31
2.7.1.F Pond Maintenance	31
2.7.1.G. Cold Climate Pond Design Considerations	32
2.7.2.C. Wetland Pretreatment	32
2.7.2.G. Cold Climate Considerations	32
2.7.3.C. Infiltration Pretreatment	32
2.7.4.C. Filtering Pretreatment	34
2.7.4.G Cold Climate Considerations	34
2.7.5.C. Open Channel Pretreatment	34
2.7.5.G Cold Climate Considerations	34

2.9 Retrofit Standards for Use in Engineering Feasibility Analysis	35
3.1 Natural Area Conservation Credit	35
3.2 Disconnection of Rooftop Runoff Credit.....	35
3.5 Grass Channel Credit	35
3.6 Environmentally Sensitive Rural Development Credit.....	35
Glossary	36
Section B - Amendments made to 5 th Printing	39
3.0 Introduction.....	39
3.7 Watershed Hydrology Protection Credit.....	40
3.8 Dealing with Multiple Credits	47
3.9 Other Strategies to Reduce Impervious Cover.....	47
Glossary	47

STORMWATER MANAGEMENT RULE

Subchapter 1 – Purpose, Authority, Policy

§18-101 Purpose

- (a) The Secretary is issuing this Rule to enhance and clarify the management of stormwater runoff to waters that are not stormwater-impaired waters. Stormwater management is necessary to reduce stream channel instability, pollution, sedimentation and local flooding, all of which have adverse impacts on the surface water and land resources of the State. Stormwater management is also necessary to protect groundwater.
- (b) This Rule:
- (1) Establishes a state permit program for post-construction management of regulated stormwater runoff to waters that are not stormwater-impaired waters;
 - (2) Establishes permitting thresholds for discharges of regulated stormwater runoff that require a stormwater discharge permit;
 - (3) Sets forth treatment standards designed to minimize the adverse impacts of regulated stormwater runoff;
 - (4) Provides for the issuance of individual and general permits;
 - (5) Specifies application requirements, including the contents of permit applications and public notification requirements; and
 - (6) Amends the Vermont Stormwater Management Manual.

§18-102 Authority

This Rule is adopted pursuant to 10 V.S.A. §1263 and §1264.

§18-103 Policy

- (a) The primary goal for management of regulated stormwater runoff is to assure compliance with the Vermont Water Quality Standards. This goal will be reached through the use of technically sound and cost-effective stormwater management methods as required by 10 V.S.A. §1264(b).
- (b) The Agency recognizes that stormwater runoff is different from the discharge of sanitary and industrial wastes because of the influence of natural events on stormwater

runoff, the variations in characteristics of those runoffs, and the increased stream flows and natural degradation of the receiving water quality at the time of discharge.

- (c) Stormwater discharge permits issued pursuant to this Rule shall require BMP-based stormwater treatment practices and not individual load allocations. Permit compliance shall be judged on the basis of performance of the terms and conditions of the discharge permit, including construction and maintenance in accordance with BMP specifications.

Subchapter 2 - Definitions

§ 18-201 Definitions

- (a) As used in this Rule, the following terms shall have the specified meaning. If a term is not defined, it shall have its common meaning:

- (1) “Agency” means the Vermont Agency of Natural Resources.
- (2) “Applicant” means a person applying for permit coverage. In some cases, more than one person may apply as co-applicants.
- (3) “Authorization to Discharge” means an authorization to discharge issued by the Secretary pursuant to a general permit.
- (4) “Best Management Practice” or "BMP" means a schedule of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce water pollution, including but not limited to the stormwater treatment practices (STPs) set forth in the Vermont Stormwater Management Manual.
- (5) “Clean Water Act” means the federal Clean Water Act, 33 U.S.C.A. §1251 et. seq.
- (6) “New Development” means the construction of new impervious surface on a tract or tracts of land where no impervious surface previously existed.
- (7) “Existing impervious surface” means an impervious surface that is in existence, regardless of whether it ever required a stormwater discharge permit.
- (8) “Existing Stormwater Discharge” means a discharge of regulated stormwater runoff which first occurred prior to June 1, 2002 and that is subject to the permitting requirements of 10 V.S.A. Chapter 47.
- (9) "Expansion" and “the expanded portion of an existing discharge” mean an increase or addition of new impervious surface to an existing impervious

surface, such that the total resulting impervious surface is greater than the minimum regulatory threshold.

- (10) “Impervious Surface” means those man made surfaces, including, but not limited to, paved and unpaved roads, parking areas, roofs, driveways and walkways, from which precipitation runs off rather than infiltrates.
- (11) "Municipality" means an incorporated city, town, village or gore, a fire district established pursuant to state law, or any other duly authorized political subdivision of the state.
- (12) “NPDES” means the National Pollutant Discharge Elimination System for the issuance of permits under section 402 of the federal Clean Water Act and includes the Vermont-administered NPDES program authorized by the federal Environmental Protection Agency.
- (13) “New impervious surface” means an impervious surface created after the effective date of this Rule.
- (14) "New Stormwater Discharge" means a new or expanded discharge of regulated stormwater runoff, subject to the permitting requirements of 10 V.S.A. Chapter 47, which first occurs after June 1, 2002 and has not been previously authorized pursuant to 10 V.S.A. Chapter 47.
- (15) “Person” means any individual, partnership, company, corporation, association, joint venture, trust, municipality, the state of Vermont or any agency, department or subdivision of the state, any federal agency, or any other legal or commercial entity.
- (16) “Project” means the new development, expansion, redevelopment and/or existing impervious surface that the Secretary is considering for coverage under an individual or general permit or which has received coverage under an individual or general permit.
- (17) “Regulated stormwater runoff” means precipitation, snowmelt, and the material dissolved or suspended in precipitation and snowmelt that runs off impervious surfaces and discharges into surface waters or into groundwater via infiltration.
- (18) “Redevelopment” means the reconstruction of an impervious surface where an impervious surface currently exists, when such reconstruction involves substantial site grading, substantial subsurface excavation, or modification of existing stormwater conveyance such that the total of impervious surface to be constructed or reconstructed is greater than the minimum regulatory threshold. Redevelopment does not mean management activities on impervious surfaces, including any crack sealing, patching,

- (19) “Secretary” means the Secretary of the Agency of Natural Resources or the Secretary’s duly authorized representative.
- (20) “Site” means either the drainage area that includes all portions of a project contributing stormwater runoff to one or more discharge points; or, the area that includes all portions of disturbed area within a project contributing stormwater runoff to one or more discharge points. The choice of either of these two methods of calculating the site area shall be at the discretion of the designer. In cases where there are multiple discharges to one or more waters, “site” shall mean the total area of the sub-watersheds. For linear projects, including but not limited to highways, roads and streets, the term “site” includes the entire right of way within the limits of the proposed work, or all portions of disturbed area within the right of way associated with the project. The method of calculating the site area for linear projects shall be at the discretion of the designer. Calculations of a site are subject to the Secretary’s review under Section 18-303 of this Rule.
- (21) “Stormwater discharge permit” or “stormwater permit” means a permit issued by the Secretary for the discharge of regulated stormwater runoff to waters that are not stormwater-impaired waters.
- (22) “Stormwater-impaired water” means a state water listed as being impaired principally due to stormwater runoff on the EPA-approved State of Vermont 303(d) List of Waters prepared pursuant to 33 U.S.C. 1313(d).
- (23) “Stormwater runoff” means precipitation and snowmelt that does not infiltrate into the soil, including material dissolved or suspended in it, but does not include discharges from undisturbed natural terrain or wastes from combined sewer overflows.
- (24) “Substantially deteriorated” means the condition of a stormwater treatment practice that would necessitate repair or reconstruction beyond that which would be considered routine, periodic maintenance for a system of similar design.
- (25) “Tract or tracts of land” means a portion of land with defined boundaries created by a deed. A deed may describe one or more tracts.
- (26) “Watershed” means the total area of land contributing runoff to a specific point of interest within a receiving water.

(27) “Vermont Stormwater Management Manual” means the Agency of Natural Resources’ stormwater management manual.

(28) “303(d) List” means the EPA-approved State of Vermont 303(d) List of Waters prepared pursuant to 33 U.S.C. 1313(d).

Subchapter 3 – Applicability and Administration

§18-301 Applicability

- (a) This Rule applies to discharges of regulated stormwater runoff to waters that are not listed on the EPA-approved State of Vermont 303(d) List of Waters as being impaired principally due to stormwater runoff.
- (b) This Rule governs the issuance of individual and general stormwater discharge permits.
- (c) This Rule does not apply to the issuance of:
 - (1) Individual or general permits for discharges of regulated stormwater runoff to stormwater-impaired waters; and
 - (2) state-issued NPDES permits that are required pursuant to the Agency’s federally-authorized NPDES stormwater permit program pursuant to 10 V.S.A. § 1258 for, including but not limited to, discharges of stormwater runoff associated with large and small construction activity, certain industrial activities, and stormwater discharges from certain small municipal separate storm sewer systems.
- (d) Stormwater runoff from impervious surfaces of less than one (1) acre that discharges to groundwater may require a permit from the Agency’s Underground Injection Control Program, unless such discharges are covered by a state stormwater discharge permit.
- (e) The Vermont Water Pollution Control Permit Regulations shall not apply to stormwater discharge permits issued pursuant to this Rule.
- (f) Upon the effective date of this Rule, the Agency’s Stormwater Management Procedures effective December 15, 1997 shall no longer apply to discharges of regulated stormwater runoff to waters that are not stormwater-impaired waters.

§18-302 Permit Required

- (a) A state stormwater discharge permit is required for the following discharges of regulated stormwater runoff:

- (1) A discharge from new development equal to or greater than one (1) acre;
- (2) A discharge from the expansion of an existing impervious surface, such that the total resulting impervious surface is equal to or greater than one (1) acre, except that a permit is not required for an expansion that meets the exemption in subsection 18-304(a)(4) of this Rule;
- (3) A discharge from the redevelopment of an existing impervious surface if the redeveloped portion of the existing impervious surface is equal to or greater than one (1) acre;
- (4) A discharge from a combination of expansion and redevelopment of an existing impervious surface, such that the total resulting impervious surface is equal to or greater than one (1) acre, except that a permit is not required if the exemptions in subsections 18-304(a)(4) and (5) of this Rule are met;
- (5) A discharge from any size of impervious surface if the Secretary determines that treatment is necessary to reduce the adverse impacts of the discharge due to the size of the impervious surface, drainage pattern, hydraulic connectivity, installation or modification of drainage or conveyance structures, location of the discharge, existing stormwater treatment, or other factors identified by the Secretary; and
- (6) A discharge from an existing impervious surface of equal to or greater than one (1) acre if the Secretary has previously issued an individual stormwater discharge permit or individual temporary pollution permit for the discharge or has previously granted coverage for the discharge under a stormwater discharge general permit.

§18-303 Circumvention

If the Secretary determines that a person has separated a single project into components in order to avoid the regulatory minimum threshold or other requirements of this Rule, the person shall be required to submit a permit application for the component parts. This subsection is not intended to include the types of scattered or non-contiguous projects that are set forth as planned development in long-range transportation plans, regional plans, municipal plans, or housing authority plans.

§18-304 Exemptions

- (a) No state stormwater discharge permit is required pursuant to this Rule for:
 - (1) Discharges of stormwater runoff from farms subject to accepted agricultural practices adopted by the Secretary of Agriculture, Food And Markets and discharges of stormwater runoff from silvicultural activities subject to

accepted management practices adopted by the Commissioner of Forests, Parks and Recreation;

(2) Discharges of stormwater runoff that are already covered by a NPDES permit for a direct or indirect discharge from a wastewater treatment plant or by a permit issued pursuant to Vermont's Underground Injection Control Rule;

(3) Discharges of regulated stormwater runoff from new development, redevelopment, or expansion of impervious surfaces if the discharge did not require a stormwater discharge permit prior to the effective date of this Rule, provided that:

(A) A technically complete application for all local, state, and federal permits, except NPDES construction activities permits, related to either the regulation of land use or a discharge to state waters has been submitted as of the effective date of this Rule, the applicant does not subsequently file an application for permit amendment that would have an adverse impact on water quality, and substantial construction (e.g. construction of roads and drainage infrastructure) of the project commences within two years of July 1, 2005;

(B) All local, state, and federal permits, except NPDES construction activities permits, related to either the regulation of land use or a discharge to state waters has been obtained as of the effective date of this Rule, and substantial construction (e.g. construction of roads and drainage infrastructure) of the project commences within two years of July 1, 2005;

(C) No local, state, or federal permit, except NPDES construction activities permits, related to either the regulation of land use or a discharge to state waters is required, and substantial construction (e.g. construction of roads and drainage infrastructure) of the project commences within two years of July 1, 2005; or

(D) The new development, redevelopment, or expansion is a linear project, and an order of necessity has been issued or right-of-way acquisition has been substantially completed as of July 1, 2004, and construction of the project commences within five years after July 1, 2004;

(4) The expansion of an existing impervious surface, such that the total resulting impervious surface is equal to or greater than one (1) acre, if:

(A) the increase or addition of impervious surface is less than 5,000 square feet; and

(B) the expansion is made to existing impervious surfaces created prior to June 1, 2002; and

(C) This exemption may be used for consecutive expansions of an existing impervious surface up to a cumulative total of 5,000 square feet. When the cumulative total expansion exceeds 5,000 square feet, the expanded impervious surface in excess of 5,000 square feet must comply with the treatment standard in subsection 18-306(a)(1) of this Rule.

(5) The redevelopment of an existing impervious surface if the redeveloped portion of the existing impervious surface is less than one (1) acre;

(6) Discharges of regulated stormwater runoff into a water that is not a stormwater-impaired water from impervious surfaces in existence as of January 1, 1978;

(7) Discharges of regulated stormwater runoff into a water that is not a stormwater-impaired water from impervious surfaces of less than one (1) acre regardless of when constructed;

(8) Discharges of regulated stormwater runoff from a single family or duplex residence, including associated driveways, that are not built as part of a multi-family residential subdivision; and

(9) Discharges of regulated stormwater runoff from the portion of a bridge superstructure that spans the normal water level of a receiving water and normally no water from the approaches flows to the bridge deck.

(b) Notwithstanding the exemptions in subsections 304(a)(1) – (9) of this section, a stormwater discharge permit is required for a discharge described in any such subsection if the Secretary makes a determination that a permit is required pursuant to subsection 18-302(a)(5) of this Rule.

§18-305 Types of Permits and Authorizations to Discharge

(a) The Secretary may issue different categories of stormwater discharge permits and authorizations to discharge under this Rule, including:

(1) An individual or general permit for any discharge of regulated stormwater runoff to a water that is not a stormwater-impaired water;

(2) General permits for different classes of stormwater runoff; and

(3) An authorization to discharge under a general permit when the Secretary determines that the discharge is eligible for coverage under the terms and conditions of the general permit.

§18-306 Permitting Standards for Discharges of Regulated Stormwater Runoff to Waters that are not Stormwater-Impaired Waters

- (a) For discharges of regulated stormwater runoff to waters that are not stormwater-impaired waters, the Secretary shall require that:
- (1) Discharges of regulated stormwater runoff from new development and expansions obtain an individual permit or coverage under a general permit consistent with the treatment standards for new development in the Vermont Stormwater Management Manual;
 - (2) Discharges of regulated stormwater runoff from redeveloped impervious surfaces obtain an individual permit or coverage under a general permit consistent with the following:
 - (A) The existing impervious surface shall be reduced by a minimum of 20%; or
 - (B) a stormwater treatment practice shall be designed to capture and treat 20% of the water quality volume treatment standard specified in the Vermont Stormwater Management Manual from the existing impervious surface; or
 - (C) a combination of (A) and (B) that when combined equal a minimum 20% reduction/treatment.
 - (3) Previously permitted existing stormwater discharges obtain an individual permit or coverage under a general permit that provides that existing discharges that have been previously authorized by the Secretary shall meet the treatment requirements in the most recently issued permit unless the approved stormwater system was never built or has substantially deteriorated. If the system was never built or has substantially deteriorated, the Secretary shall require that the permittee conduct an engineering feasibility analysis acceptable to the Secretary and construct a stormwater management system to meet, or to meet as closely as possible, the treatment standards for new development in the Vermont Stormwater Management Manual. If an existing stormwater discharge is required to obtain a permit pursuant to subsection 18-302(a)(5) of this Rule, the Secretary shall require that the permittee conduct an engineering feasibility analysis acceptable to the Secretary and construct a stormwater management system to meet, or to meet as closely as possible, the treatment standards for new development in the Vermont Stormwater Management Manual;
 - (4) Subject to subsection 306(a)(6) of this section, if a permit is required for an expansion of an existing impervious surface, the expansion shall meet the

- (A) meet the treatment standards for the existing impervious surface set forth in the most recently issued stormwater permit for the existing impervious surface;
- (B) not be subject to any treatment standards if a stormwater permit was never previously required for the existing impervious surface and the Secretary has not required a stormwater permit pursuant to subsection 18-302(a)(5) of this Rule; or
- (C) if a stormwater discharge permit was previously required for the existing impervious surface and was never obtained, the permittee shall conduct an engineering feasibility study acceptable to the Secretary and construct a stormwater management system to meet, or to meet as closely as possible, the treatment standards for new development in the Vermont Stormwater Management Manual.

(5) If a permit is required for the redevelopment of existing impervious surfaces, the redeveloped portion of the existing impervious surface shall meet the treatment standard in subsection 306(a) (2) of this section. The existing impervious surface that is not redeveloped shall:

- (A) meet the treatment standards for the existing impervious surface set forth in the most recently issued stormwater permit for the existing impervious surface;
- (B) not be subject to any treatment standards if a stormwater permit was never previously required for the existing impervious surface and the Secretary has not required a stormwater permit pursuant to subsection 18-302(a)(5) of this Rule; or
- (C) if a stormwater discharge permit was previously required for the existing impervious surface and was never obtained, the permittee shall conduct an engineering feasibility analysis acceptable to the Secretary and construct a stormwater management system to meet, or to meet as closely as possible, the treatment standards for new development in the Vermont Stormwater Management Manual.

(6) If:

- (A) a permit is required for the expansion of an existing impervious surface; and

(B) the new stormwater discharge from the expansion will commingle with the existing stormwater discharge from the existing impervious surface prior to treatment ; and

(C) the commingled discharge will be treated in a combined stormwater management system; then the new stormwater discharge must meet the treatment standards for new development in the Vermont Stormwater Management Manual and the existing stormwater discharge shall:

- (i) meet the treatment standards for the existing impervious surface set forth in the most recently issued stormwater permit for the existing impervious surface;
- (ii) not be subject to any treatment standards if a stormwater permit was never previously required for the existing impervious surface and the Secretary has not required a stormwater permit pursuant to subsection 18-302(a)(5) of this Rule; or
- (iii) if a stormwater discharge permit was required for the existing impervious surface and was never obtained, the permittee shall conduct an engineering feasibility analysis acceptable to the Secretary and construct a stormwater management system to meet, or to meet as closely as possible, the treatment standards for new development in the Vermont Stormwater Management Manual.

(b) Any individual or general permit issued for discharges of regulated stormwater runoff to waters that are not stormwater-impaired waters shall specify the use of best management practices to control regulated stormwater runoff. Permit compliance shall be judged on the basis of performance of the terms and conditions of the discharge permit, including construction and maintenance in accordance with BMP specifications.

(c) Any individual or general permit issued for discharges of regulated stormwater runoff to waters that are not stormwater-impaired waters shall contain such additional conditions, requirements, and restrictions as the Secretary deems necessary to achieve and maintain compliance with Vermont water quality standards.

(d) A permittee that has an authorization to discharge under the terms of a general stormwater discharge permit issued by the Secretary prior to the effective date of this Rule shall continue to comply with the terms and conditions of the authorization to discharge and applicable general permit after the effective date of this Rule. The permittee shall apply for renewal of the authorization to discharge in accordance with the applicable general permit and this Rule.

§18-307 Stormwater Discharge General Permit

(a) Purpose and Applicability.

This section sets forth a process for the development and issuance of stormwater discharge general permits for discharges of regulated stormwater runoff to waters that are not stormwater-impaired waters.

(b) Issuance of Stormwater Discharge General Permits; Notice and Hearing

- (1) The Secretary shall prepare a draft stormwater discharge general permit and shall provide notice of the draft to the clerk of the municipalities in the geographic area covered by the general permit, on the Environmental Notice Bulletin and to a list of interested persons, if any.
- (2) The Secretary shall provide at least thirty (30) days from completion of the public notice requirements in subsection 307(b) (1) of this section for the submission of written public comments on the proposed draft general permit.
- (3) Any request for a public informational meeting must be submitted in writing to the Secretary during the public comment period. The Secretary shall hold a public informational meeting if there is a demonstrated interest in a meeting.
- (4) The Secretary shall publish notice of any public informational meeting at least thirty (30) days prior to the meeting. Notice shall be given in the same manner as notice of the draft general permit.

(c) General Requirements Applicable to Stormwater Discharge General Permits

- (1) A general permit shall require that a permittee allow the Secretary and his/her authorized representatives, at reasonable times, and upon presentation of credentials, to enter upon and inspect the permitted property and the stormwater collection, treatment and control system and to have access to and copy any records required to be kept pursuant to the permit.
- (2) A general permit shall require that the permittee properly operate and maintain all stormwater collection, treatment and control systems and that the permittee shall submit an annual inspection report on the operation, maintenance and condition of the stormwater collection, treatment and control systems. Inspections shall be conducted between the conclusion of spring snow melt and June 15th of each year and the inspection report shall be submitted to the Secretary by July 15th of each year, or by July 30th of each year if performed by a utility or municipality pursuant to a duly adopted stormwater management ordinance. The first annual inspection report for a new development, redevelopment or expansion shall include a written

certification by a designer, other than the landowner, stating that the stormwater system was installed in accordance with the conditions of the general permit and is functioning properly.

- (3) A general permit shall require BMP-based stormwater treatment practices and not individual source pollutant load allocations. Permit compliance shall be judged on the basis of performance with the terms and conditions of the discharge permit, including construction and maintenance in accordance with BMP specifications.

(d) Duration of General Permit

A general permit shall be valid for a period of five years, unless the Secretary specifies the period of time for which a general permit is valid other than five years where such time is consistent with the provisions of 10 V.S.A. §1264.

(e) Modification of General Permit

- (1) The Secretary may modify a general permit after providing an opportunity for public participation in the same manner as described in subsection 307(b) of this section. Grounds for modification include, but are not limited to:

- (A) The statutes or rules on which the general permit is based have changed;
- (B) There is a change in any condition that requires redrafting or alteration of the boundaries of a designated geographic area;
- (C) If the general permit has been issued for a non-stormwater impaired water and the Secretary subsequently determines that the water is a stormwater-impaired water;
- (D) When required by the reopener conditions in the general permit; or
- (E) To correct technical mistakes, such as errors in calculations or mistaken interpretations of law made in determining permit conditions.

§18-308 Authorizations to Discharge Under a Stormwater Discharge General Permit

(a) Purpose and Applicability

This section sets forth a process for the issuance of authorizations to discharge pursuant to stormwater discharge general permits for discharges of regulated stormwater runoff to waters that are not stormwater-impaired waters.

(b) Application for Coverage under a Stormwater Discharge General Permit

- (1) An applicant for coverage under a stormwater discharge general permit shall submit a completed Notice of Intent (NOI) form with all necessary attachments and fees and all other application information required by the general permit and the Secretary.
- (2) The applicant shall own or control the impervious surfaces for which permit coverage is required. If the applicant merely controls the impervious surfaces, the owner of the impervious surfaces shall be a co-applicant, unless the applicant that controls the impervious surface is a municipality or stormwater utility that has assumed responsibility for the management of discharges of regulated stormwater runoff from the impervious surfaces.
- (3) A municipality or stormwater utility may apply as the permittee in lieu of the owner(s) of the impervious surfaces for which coverage under a general stormwater discharge permit is sought, provided that the municipality or stormwater utility accepts responsibility for compliance with the general permit and has the legal authority to do so.
- (4) An application for an existing housing or commercial project shall include the owners' association, condominium association or other common association as co-permittee with applicant. The Secretary may waive this requirement for existing developments on a case-by-case basis if a responsible party or parties accept(s) responsibility for the stormwater management system. If application is made in connection with a new housing or commercial development, the developer and an owners' association, condominium association, other common association or other legal entity accepting responsibility for the stormwater management system shall apply as co-permittees.
- (5) The NOI must be signed by a designer acceptable to the Secretary.
- (6) The Secretary may require an applicant to submit any additional information that the Secretary considers necessary in order to make a decision on the issuance or denial of an authorization to discharge under the general permit. The Secretary may deny coverage if the requested information is not provided within sixty (60) days of the Secretary's request.

(c) Public Notice for Applications for an Authorization to Discharge

- (1) Once the Secretary determines that an application for coverage under a stormwater discharge general permit is complete, the Secretary shall provide public notice to the clerk of the municipality in which the discharge is located, shall post notice on the Environmental Notice Bulletin, and shall provide notice to a list of interested persons, if any.

- (2) For a period of ten (10) days following completion of the public notice requirements in subsection 308(c)(1) of this section, the Secretary shall provide an opportunity to the public to provide written comment regarding whether the application complies with the terms and conditions of the general permit.
- (3) The period for public comment may be extended at the sole discretion of the Secretary.
- (4) The applicant shall comply with any additional notice requirements specified in the general permit.

(d) Interested Persons List

The Secretary shall maintain an interested persons list for those individuals/groups that wish to receive copies of notices of all general permit applications within the State or within a certain geographic area.

(e) Changes Made to a Project After the Public Comment Period and Prior to Issuance of an Authorization to Discharge

If a proposed project changes after the public comment period has ended, but before the authorization to discharge is issued, the project does not need to be re-noticed for public comment if:

- (1) the proposed project changes do not reduce the quality of the stormwater discharge;
- (2) the proposed project changes do not substantially increase the quantity of the discharge or change the discharge location so as to adversely affect the instream hydrology or geomorphology; and
- (3) there is not a significant change in the type or nature of proposed treatment.

(f) Issuance or Denial of Authorizations to Discharge

- (1) If the Secretary determines that an application is complete and that the discharge meets the terms and conditions of the general permit, the Secretary shall issue an authorization to discharge unless the Secretary determines that an individual permit is required pursuant to subsection 308(1) of this section.
- (2) Denials of an authorization to discharge shall be issued in writing, stating the reasons for the denial.

- (3) If an application is denied for lack of technical or other information, the Secretary will provide appropriate information to help the applicant correct the deficiencies and re-apply for an authorization to discharge.

(g) Renewal of an Authorization to Discharge

A permittee who wishes to continue to discharge after the expiration date of his/her authorization to discharge shall apply for renewal in accordance with the general permit. The Secretary may require any permittee authorized by a general permit to apply for an individual stormwater discharge permit in accordance with subsection 308(l) of this section.

(h) Transfer of Authorization to Discharge or Addition of a Co-Permittee

- (1) A permittee may transfer an authorization to discharge by submitting a notice of transfer on a form provided by the Secretary. The notice shall be submitted at least five (5) days prior to transfer and shall include, at a minimum:
 - (A) the name and address of the new permittee;
 - (B) the name and address of the former permittee;
 - (C) the date of transfer; and
 - (D) a statement, signed by the new permittee, stating that he/she has read and is familiar with the terms of the general permit and the authorization to discharge and agrees to comply with all the terms and conditions of the general permit and the authorization to discharge.
- (2) A permittee may add a co-permittee by submitting a notice of addition of co-permittee on a form provided by the Secretary. The form notice shall include, at a minimum, the information listed in subsections 308(h) (1) (A)-(D) of this section.

(i) Changes to Permitted Impervious Surfaces

The permittee shall notify the Secretary of any planned expansion or change that may result in new or increased discharges of regulated stormwater runoff at least sixty (60) days prior to the expansion or change. The Secretary may require the permittee to submit additional information on the proposed change or expansion. The Secretary shall determine the appropriateness of continued inclusion under the general permit.

(j) Modification of Authorization to Discharge

If a project changes after the issuance of an authorization to discharge is issued, but before the project is built, the authorization to discharge may be amended without re-noticing for public comment if:

- (1) the proposed project changes do not reduce the quality of the stormwater discharge;
- (2) the proposed project changes do not substantially increase the quantity of the stormwater discharge or change the stormwater discharge location so as to adversely affect the instream hydrology or geomorphology; and
- (3) there is not a significant change in the type or nature of proposed treatment.

(k) Revocation of Authorization to Discharge

The Secretary may, after notice and opportunity for public hearing, revoke or suspend, in whole or in part, an authorization to discharge under a general permit for cause, including but not limited to:

- (1) violation of the terms or conditions of the general permit;
- (2) obtaining coverage under a general permit by misrepresentation or failure to disclose fully all relevant facts; or
- (3) a change in any condition that requires either a temporary or permanent reduction or elimination of the permitted activity or discharge.

(l) Requiring or Requesting an Individual Permit Rather than Coverage under a General Permit

- (1) The Secretary may require a permittee applying for coverage under a general permit to apply for an individual permit. Cases where an individual permit may be required include, but are not limited to, the following:
 - (A) The permittee is not in compliance with the terms and conditions of the general permit;
 - (B) The discharge does not qualify for general permit coverage taking into account:
 - (i) the location of the discharge;
 - (ii) the size of the discharge; or

(iii) the impact on the receiving water; or

(C) If a permit applicant proposes to use an alternative stormwater treatment system pursuant to the Vermont Stormwater Management Manual.

(2) If the Secretary determines that a permittee authorized by a general permit is required to apply for an individual permit, the Secretary shall so notify the permittee. This notice shall include a brief statement of the reasons for this decision, an application form and the timeframe for the permittee to file the application.

(3) When an individual permit is issued to a person otherwise subject to a general permit, the general permit's applicability to the individual permittee is automatically terminated on the effective date of the individual permit.

(4) Any permittee authorized by a general permit may request to be excluded from the coverage of the general permit provided the permittee submits information supporting the request. If the Secretary finds that the terms and conditions of the general permit do not apply to the activity or discharge, or that the activity or discharge is more appropriately covered by an individual permit, the Secretary shall grant the request and shall notify the permittee in writing of his/her decision. Upon receipt of such notification, the permittee shall submit to the Secretary an application for an individual permit.

(m) Requiring Coverage under a General Permit

(1) The Secretary may require any person applying for an individual permit to apply for coverage under a general permit provided the Secretary finds the discharge complies with all conditions of the general permit and the discharge is more appropriately covered under the general permit.

(2) Any permittee subject to an individual permit and wishing to obtain coverage under a general permit may file a notice on forms provided by the Secretary. Upon the request of the Secretary, any person who files a notice shall submit such additional information that may be necessary to enable the Secretary to determine whether to authorize the activity or discharge under the terms of a general permit.

(3) Any permittee subject to an individual permit shall be authorized to discharge under the terms of a general permit upon issuance of a notice by the Secretary authorizing the discharge under the general permit. The individual permit's applicability to the permittee is automatically terminated on the effective date of the authorization to discharge under the general permit.

§18-309 Individual Stormwater Discharge Permits

(a) Purpose and Applicability

This section sets forth a process for the development and issuance of individual stormwater discharge permits for discharges of regulated stormwater runoff to waters that are not stormwater-impaired waters.

(b) Application for an Individual Stormwater Permit

- (1) An applicant for an individual permit to discharge regulated stormwater runoff shall submit a completed application form with all necessary attachments and fees.
- (2) The applicant shall own or control the impervious surfaces for which permit coverage is required. If the applicant merely controls the impervious surfaces, the owner of the impervious surfaces shall be a co-applicant, unless the applicant that controls the impervious surface is a municipality or stormwater utility that has assumed responsibility for the management of discharges of regulated stormwater runoff from the impervious surfaces.
- (3) An application for an existing housing or commercial project shall include the owner's association, condominium association or other common association as a co-permittee. The Secretary may waive this requirement for existing projects on a case-by-case basis if a responsible party or parties accepts responsibility for the stormwater management system. If application is made in connection with a new housing or commercial development, the developer and an owners' association, condominium association, other common association, or other legal entity accepting responsibility for the stormwater management system shall apply as co-permittees.
- (4) A municipality or stormwater utility may apply as a permittee in lieu of the owner(s) of the impervious surfaces for which an individual stormwater permit is required, provided that the municipality or stormwater utility accepts responsibility for compliance with the individual permit and has the legal authority to do so.

(c) Additional Information Requested by the Secretary

The Secretary may require an applicant to submit additional information that the Secretary considers necessary in order to make a decision on the issuance or denial of an individual permit. The Secretary may deny the individual permit if the requested information is not provided within sixty (60) days of the Secretary's request.

(d) Public Notice and Hearing for Applications for an Individual Stormwater Discharge Permit

- (1) If the Secretary determines that an application for an individual stormwater discharge permit is complete, the Secretary shall prepare a draft stormwater discharge permit and shall provide notice to the clerk of the municipality in which the discharge is located, on the Environmental Notice Bulletin, and to a list of interested persons, if any.
- (2) The Secretary shall provide thirty (30) days from completion of the public notice requirements in subsection 309(d)(1) of this section for persons to submit written comments on the application and the draft stormwater discharge permit.
- (3) The period for public comment may be extended at the sole discretion of the Secretary.
- (4) Any request for a public informational meeting must be submitted in writing to the Secretary during the thirty (30) day public comment period. The Secretary will hold a public informational meeting if there is a demonstrated public interest in holding such a meeting.
- (5) The Secretary shall publish notice of a public informational meeting at least thirty (30) days prior to the meeting. Notice shall be given in the same manner as notice of the permit application.

(e) Interested Persons List

The Secretary shall maintain an interested persons list for those individuals/groups that wish to receive copies of notices of all individual stormwater permit applications within the State or within a certain geographic area.

(f) Changes Made to Project After Public Comment Period and Prior to Issuance of Final Individual Permit

If a proposed project changes after the public comment period has passed, but before the final individual permit is issued, the project does not need to be re-noticed for public comment if:

- (1) the proposed changes do not reduce the quality of the stormwater discharge;
- (2) the proposed changes do not substantially increase the quantity of the stormwater discharge or change the stormwater discharge location so as to adversely affect the instream hydrology or geomorphology; or
- (3) there is not a significant change in the type or nature of proposed treatment.

(g) Issuance or Denial of an Individual Permit

If the Secretary approves an application, the Secretary may issue an individual permit. Denials of an individual permit shall be issued in writing, stating the reasons for the denial. If the permit application is denied for lack of technical or other information, the Secretary will provide appropriate information to help the applicant correct the deficiencies and re-apply for an individual permit.

(h) Transfer of Individual Permit or Addition of Co-Permittee

(1) A permittee may transfer an individual permit by submitting a notice of transfer on a form provided by the Secretary. The notice shall be submitted at least five (5) days prior to the transfer and shall include, at a minimum:

(A) the name and address of the new permittee;

(B) the name and address of the former permittee;

(C) the date of transfer; and

(D) a statement, signed by the new permittee, stating that he/she has read and is familiar with the terms of the individual permit and agrees to comply with the individual permit.

(2) A permittee may add a co-permittee by submitting a notice of addition of co-permittee on a form provided by the Secretary. The form notice shall include, at a minimum, the information listed in subsections 309(h)(1)(A)-(D) of this section.

(i) Permit Modification

(1) The Secretary may modify an individual permit after providing an opportunity for public participation in the same manner described in subsection 309(d) of this section. The Secretary may modify an individual permit for cause, including but not limited to the following:

(A) The statutes or rules on which the individual permit is based have changed;

(B) There is a change in any condition that requires redrafting or alteration of the boundaries of a designated geographic area;

(C) If the individual permit has been issued for a non-stormwater impaired water and the Secretary subsequently determines that the water is a stormwater-impaired water;

(D) When required by the reopener conditions in the individual permit; or

(E) To correct technical mistakes, such as errors in calculations or mistaken interpretations of law made in determining permit conditions.

(2) Notwithstanding subsection 18-309(i)(1) of this section, if a project changes after the issuance of an individual permit, but before the project is built, the individual permit may be amended without re-noticing for public comment if:

(A) the proposed project changes do not reduce the quality of the stormwater discharge;

(B) the proposed project changes do not substantially increase the quantity of the stormwater discharge or change the stormwater discharge location so as to adversely affect the instream hydrology or geomorphology; and

(C) there is not a significant change in the type or nature of proposed treatment.

(j) Revocation of Individual Permits

(1) The Secretary may, after notice and opportunity for public hearing, revoke or suspend, in whole or in part, an individual permit for cause, including but not limited to:

(A) violation of the terms or conditions of the individual permit;

(B) obtaining coverage under an individual permit by misrepresentation or failure to disclose fully all relevant facts; or

(C) a change in any condition that requires either a temporary or permanent reduction in or elimination of the permitted discharge.

(k) Permit Renewal

(1) A permittee who wishes to continue to discharge after the expiration date of his/her individual permit shall file an application for reissuance of the individual permit, on a form provided by the Secretary, at least 90 days prior to its expiration. A renewal application shall be noticed subject to the public participation requirements set forth in subsection 309(d) of this section. The Secretary may require an applicant for renewal of an individual permit to be subject to a general permit in accordance with subsection 18-308(m) of this Rule.

(2) The Secretary may require an applicant to submit additional information that the Secretary considers necessary in order to make a decision on the

renewal of an individual permit. The Secretary may deny the renewal if the requested information is not provided within thirty (30) days of the Secretary's request.

(l) General Requirements

(1) Each individual permit:

(A) shall require proper operation and maintenance of all stormwater collection, treatment and control systems and that the permittee shall submit an annual inspection report on the operation, maintenance and condition of the stormwater collection, treatment and control systems. Inspections shall be conducted between the conclusion of spring snow melt and June 15th of each year and the inspection report shall be submitted to the Secretary by July 15th of each year, or by July 30th of each year if performed by a utility or municipality pursuant to a duly adopted stormwater management ordinance. The first annual inspection report for a new development, redevelopment or expansion shall include a written certification by a designer, other than the landowner, stating that the stormwater system was installed in accordance with the conditions of the individual permit and is functioning properly;

(B) shall require that the permittee allow the Secretary and his/her authorized representatives, at reasonable times and upon presentation of credentials, to enter upon and inspect the permitted property and to have access to and copy any records required to be kept pursuant to the permit;

(C) may contain such additional conditions, requirements and restrictions as the Secretary deems necessary to achieve and maintain compliance with the Vermont Water Quality Standards, including but not limited to requirements concerning recording, reporting and monitoring the effects on receiving waters due to operation and maintenance of stormwater collection, treatment and control systems.

§18-310 Compliance with Existing Permits

Unless otherwise provided herein, this Rule does not affect the responsibility of a permittee to comply with the most recent previously issued stormwater permit.

§18-311 Stormwater Utilities

(a) This Rule recognizes that a municipality may elect to form a stormwater utility or join with other municipalities to form a regional stormwater-utility, or adopt an ordinance related to stormwater management, to assume responsibility for the management of regulated stormwater runoff. In such cases, the stormwater utility or municipality may

apply for permit coverage in lieu of other entities that own or control impervious surfaces that require a permit pursuant to this Rule.

(b) Any individual permit or authorization to discharge under a general permit issued to a stormwater utility, or to a municipality pursuant to an ordinance-based stormwater management program, shall be consistent with the scope of the authority of the utility or management program, and may include permit requirements for, including but not limited to, construction of stormwater management systems, performance of maintenance and inspection duties, submittal of certifications of compliance, retention of records and compliance with all other applicable provisions of this Rule and any applicable individual or general permit.

§18-312 Validity of Permit and Authorization to Discharge; Recording in Land Records

(a) A notice of the issuance of an individual stormwater permit or an authorization to discharge pursuant to a general stormwater permit shall be recorded by the permittee in the local land records within fourteen (14) days of the issuance of the individual permit or authorization to discharge. A copy of the notice form that must be filed is available from the Secretary. A copy of the recording shall be provided to the Secretary within fourteen (14) days of the permittee's receipt of a copy of the recording from the local land records. Stormwater discharge permits for public roads are exempted from the recording requirements in this section.

(b) An individual stormwater permit or authorization to discharge under a general stormwater permit shall not be effective until the notice of the permit or authorization is filed in the local land records in accordance with subsection 312(a) of this section.

§18-313 Enforcement

This Rule may be enforced in accordance with 10 V.S.A. Chapter 47 and 10 V.S.A. Chapters 201 and 211.

§18-314 Appeals

A person aggrieved by a final act or decision of the Secretary under this Rule may appeal to the environmental court in accordance with 10 V.S.A. Chapter 220.

§18-315 Liability

The issuance of a permit or authorization to discharge under this Rule does not relieve the permittee from the responsibility for proper operation of any stormwater collection, treatment and control system and does not limit liability under common law or statutes pertaining to ground and surface water protection or rights.

Subchapter 4 Amendments to the Vermont Stormwater Management Manual

The following are amendments to the Vermont Stormwater Management Manual originally issued in April, 2002. Additions are denoted by underlining and deletions are denoted by strike-outs. Section A includes amendments made to the 4th Printing and Section B includes amendments made to the 5th Printing.

Section A – Amendments made to the 4th Printing

1.1.1 Water Quality Treatment Standard (WQTS)

The objective of the WQTS is to capture 90 percent of the annual storm events, and to remove 80 percent of the average annual post development total suspended solids load (TSS), and 40 percent of the total phosphorus (TP) load. The following water quality treatment standards must be met for all new and existing development:

1. For new development and expansion of existing ~~development~~ impervious surfaces, employment of the practices presented in Table 2.1, will meet the water quality objective.
2. For redevelopment, either:
 - a. the existing impervious surface shall be reduced by 20%; or
 - b. a STP shall be designed to capture and treat 20% of the water quality volume from the existing impervious area; or
 - c. a combination of a. or b. that when combined equal a minimum 20% reduction/treatment.

1.1.2 Channel Protection Treatment Standard

In evaluating channel protection volume and STPs for channel protection, the following criteria shall be applied:

- ~~The minimum recommended orifice size is one inch~~ (if Orifices less than three inches shall be protected from clogging (See illustration in Appendix D5 of the Vermont Stormwater Management Manual, Volume II-Technical Guidance). The minimum recommended orifice size is one inch. Site designers only need to provide the detention time provided by the one-inch minimum orifice size.
- For projects that have disconnected the majority of impervious surfaces per use of the credits in Section 3 such that routing to a detention facility is not achieved, the designer may use an alternative design standard. In these cases, the designer shall demonstrate that the post-developed peak discharge from the disconnected portion of the site for the one-year storm is no greater than the peak discharge from the same portion of the site as modeled as if 12-hour detention were provided.

1.1.3 Groundwater Recharge Treatment Standard

Figure 1.2 illustrates the recharge volume requirements as a function of hydrologic soil group type and site impervious cover (expressed in watershed inches).

In cases where the “Percent Volume Method” is used, and the entire site does not drain to the STP used, the Designer shall use the “Percent Area Method” to verify that an adequate area drains to the STP.

The groundwater recharge treatment standard shall be waived for:

3. No subsurface infiltration of stormwater will be allowed within 500’ of a public community water supply or non-transient non-community water supply.

1.1.4 Overbank Flood Protection Treatment Standard

In evaluating overbank flood protection and related STPs, the following criteria shall be applied:

For expansions of previously non-permitted projects, the site shall mean the expanded portion of the site including all areas within the limits of construction.

1.1.5 Extreme Flood Protection Treatment Standard

In evaluating extreme flood control and related STPs, the following criteria shall be applied:

For expansions of previously non-permitted projects, the site shall mean the expanded portion of the site including all areas within the limits of construction.

2.7.1.C. Pond Pretreatment

Pre-treatment of roof runoff is not required, provided the runoff is routed to the treatment practice in a manner such that it is unlikely to accumulate significant additional sediment (e.g. via closed pipe system, or grass channel), and provided the runoff is not commingled with other runoff.

Sediment Forebay

Required Elements

- Direct access for appropriate maintenance equipment shall be provided to the forebay.

2.7.1.D. Pond Treatment

Minimum Pond Geometry

Required Elements

- The minimum length to width ratio for ponds shall be 1.5:1 (i.e., length relative to width).
- Provide a maximum Drainage Area: Surface Area Ratio of 100:1 (applies to all design variants except P-1)

2.7.1.E. Pond Landscaping

Pond Benches

Required Elements

- The perimeter of all deep pool areas (four feet or greater in depth) shall be surrounded by two benches:
 1. Safety Bench: Except when pond side slopes are 4:1 (h:v) or flatter, provide a safety bench that generally extends 15 feet outward from the normal water edge to the toe of the pond side slope. The maximum slope of the safety bench shall be 6% (10' to 12' allowable on sites with extreme space limitations), however, if the pond is fenced, the safety bench can be reduced to 6 feet; and
 2. Aquatic Bench: Incorporate an aquatic bench that generally extends up to 15 feet inward from the normal shoreline, has an irregular configuration, and a maximum depth of eighteen inches below the normal pool water surface elevation.

Landscaping Plan

Required Elements

- Woody vegetation may not be planted or allowed to grow within 15 feet of the toe of the embankment and 25 feet from the principal spillway structure.

2.7.1.F. Pond Maintenance

Required Elements

- Maintenance responsibility for a pond and its buffer shall be vested with a responsible authority by means of a legally binding and enforceable maintenance agreement that is executed as a condition of plan approval.
- The principal spillway shall be equipped with a removable trash rack, and generally accessible from dry land.

Maintenance Access

Required Elements

- A maintenance right of way or easement shall extend to a pond from a public or private road.

Safety Features

Required Elements

- Side slopes to the pond shall not exceed 3:1 (h:v), and shall terminate on a safety bench.
- The principal spillway opening shall not permit access by small children, and endwalls above pipe outfalls greater than 48 inches in diameter shall be fenced to prevent a hazard.

2.7.1.G. Cold Climate Pond Design Considerations

The following section provides design guidance for possible modifications to ponds to reflect the severe winter climate in Vermont. This design guidance is not mandatory, with the exception of “Pipe Freezing and Clogging” and “Road Sand Build-Up”, but site designers may consider these modifications on a case-by-case basis as a function of site conditions, receiving water sensitivity, or downstream flooding threat.

2.7.2.C. Wetland Pretreatment

Pre-treatment of roof runoff is not required, provided the runoff is routed to the treatment practice in a manner such that it is unlikely to accumulate significant additional sediment (e.g. via closed pipe system, or grass channel), and provided the runoff is not commingled with other runoff.

2.7.2.G. Cold Climate Considerations

The following section provides design guidance for possible modifications to wetlands to reflect the severe winter climate in Vermont. This design guidance is ~~not~~ mandatory, but site designers may consider these modifications on a case-by-case basis as a function of site conditions, receiving water sensitivity, or downstream flooding threat.

2.7.3.C. Infiltration Pretreatment

Required Pretreatment Techniques to Prevent Clogging

Pre-treatment of roof runoff is not required, provided the runoff is routed to the infiltration practice in a manner such that it is unlikely to accumulate significant additional sediment (e.g. via closed pipe system, or grass channel), and provided the runoff is not commingled with other runoff.

Required Elements

- For infiltration basins and trenches, a minimum pretreatment volume of at least 25% of the WQ_v must be provided prior to entry to an infiltration facility, and can be provided in the form of a sedimentation basin, sump pit, grass channel, filter strip, plunge pool or some combination of these measures.
- If the f_c for the underlying soils is greater than 2.0 inches per hour, a minimum pretreatment volume of at least 50% of the WQ_v must be provided.
- If the f_c for the underlying soils is greater than 5.0 inches per hour, 100% of the WQ_v shall be pre-treated prior to entry into an infiltration facility.
- Exit velocities from pretreatment chambers shall be non-erosive (see Appendix D7 of the Vermont Stormwater Management Manual, Volume II-Technical Guidance) during the overbank flood events (i.e., Q_{p10}).
- Pretreatment Techniques to Prevent Clogging. Infiltration basins or trenches should have redundant methods to protect the long-term integrity of the infiltration rate. Three or more of the following techniques must be installed for infiltration basins or trenches:
 - Grass channel sized for the pretreatment volume (maximum velocity of 1 fps for water quality flow; see Section 2.7.4.C. for more detailed design information), or
 - Grass filter strip sized for the pretreatment volume (minimum 20 feet and only if sheet flow is established and maintained), and
 - Bottom sand layer
 - Upper sand layer (6" minimum with filter fabric at the sand/gravel interface-infiltration trench only)
 - Use of washed bank run gravel (2-5 inch diameter, typical) as aggregate (infiltration trench only)

Alternatively, a pre-treatment settling chamber may be provided and sized to capture the pretreatment volume. Use the method prescribed in section 2.7.4.C (i.e., the Camp-Hazen equation) to size the chamber.

Pretreatment Techniques to Prevent Clogging:

~~Infiltration basins or trenches should have redundant methods to protect the long-term integrity of the infiltration rate. Three or more of the following techniques must be installed for infiltration basins or trenches:~~

- ~~Grass channel sized for the pretreatment volume (maximum velocity of 1 fps for water quality flow; see Section 2.7.4.C. for more detailed design information), or~~
- ~~Grass filter strip sized for the pretreatment volume (minimum 20 feet and only if sheet flow is established and maintained), and~~
- ~~Bottom sand layer~~
- ~~Upper sand layer (6" minimum with filter fabric at the sand/gravel interface infiltration trench only)~~

- ~~Use of washed bank run gravel (2-5 inch diameter, typical) as aggregate (infiltration trench only)~~

Design Guidance

- The sides of infiltration trenches should be lined with an acceptable filter fabric that prevents soil piping.
- In infiltration trench designs, incorporate a fine gravel or sand layer above the coarse gravel treatment reservoir to serve as a filter layer.

2.7.4.C. Filtering Pretreatment

Pre-treatment of roof runoff is not required, provided the runoff is routed to the filtering practice in a manner such that it is unlikely to accumulate significant additional sediment (e.g via closed pipe system, or grass channel), and provided the runoff is not commingled with other runoff.

2.7.4.G Cold Climate Considerations

The following section provides design guidance for possible modifications to filters to reflect the severe winter climate in Vermont. This design guidance is not mandatory, with the exception of underdrain standards in “Pipe Freezing” and all standards listed in “Road Sand Build-Up”, but site designers may consider these modifications on a case-by-case basis as a function of site conditions, receiving water sensitivity, or downstream flooding threat.

2.7.5.C. Open Channel Pretreatment

Pre-treatment of roof runoff is not required, provided the runoff is routed to the channel in a manner such that it is unlikely to accumulate significant additional sediment (e.g via closed pipe system, or grass channel), and provided the runoff is not commingled with other runoff.

2.7.5.G Cold Climate Considerations

The following section provides design guidance for possible modifications to open channels to reflect the severe winter climate in Vermont. This design guidance is not mandatory, with the exception of “Culvert Freezing” and “The Impact of Deicers on Channel Vegetation”, but site designers may consider these modifications on a case-by-case basis as a function of site conditions, receiving water sensitivity, or downstream flooding threat.

2.9 Retrofit Standards for Use in Engineering Feasibility Analysis

The following required elements for stormwater ponds shall be considered guidance for purposes of retrofit designs required under the Engineering Feasibility Analysis.

3.1 Natural Area Conservation Credit

To the extent practicable, these natural areas should be delineated to maximize contiguous land and avoid fragmentation. Under the credit, a designer can subtract conservation areas from total site area when computing the water quality volume. The volumetric runoff coefficient, R_v , is still calculated based on the percent impervious cover for the entire site, including the conserved portion.

3.2 Disconnection of Rooftop Runoff Credit

The rooftop disconnection credit is subject to the following restrictions:

- Where a gutter/downspout system is not used the rooftop runoff must drain as either sheetflow from the structure or drain to a subsurface drain field that is not directly connected to the drainage network.

3.5 Grass Channel Credit

If designed according to the following design criteria, the grass channel will meet the WQ_v for certain kinds of residential development. Use of a grass channel will ~~automatically~~ also meet the minimum recharge Re_v requirement (under the Percent Area Method) regardless of the geometry or slope, ~~If designed according to the following design criteria, the grass channel will meet the WQ_v for certain kinds of residential development~~ provided that the remaining criteria related to land use and channel length are met.

3.6 Environmentally Sensitive Rural Development Credit

The Re_v and WQ_v requirements are completely met without the use of structural practices in certain low density (~~minimum of 0.5 dwelling units per acre~~ a maximum of 1 unit per 2 acres as an average over the total project area) residential developments when the following conditions are met:

- The total impervious cover footprint is less than 8 % of lot and project area.
- A minimum of 25% of the site project is protected in natural conservation areas.

Glossary

The following definitions are added to the Glossary:

Agency - the Vermont Agency of Natural Resources.

Applicant - a person applying for permit coverage. In some cases, more than one person may apply as co-applicants.

Authorization to Discharge - an authorization to discharge issued by the Secretary pursuant to a general permit.

Best Management Practice or BMP - a schedule of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce water pollution, including but not limited to the stormwater treatment practices (STPs) set forth in this Manual.

Clean Water Act - the federal Clean Water Act, 33 U.S.C.A. §1251 et. seq.

Existing impervious surface - means an impervious surface that is in existence, regardless of whether it ever required a stormwater discharge permit.

Existing Stormwater Discharge - a discharge of regulated stormwater runoff which first occurred prior to June 1, 2002 and that is subject to the permitting requirements of 10 V.S.A. Chapter 47.

Expansion and expanded portion of an existing discharge - an increase or addition of new impervious surface to an existing impervious surface, such that the total resulting impervious surface is greater than the minimum regulatory threshold.

Impervious Surface - those man made surfaces, including, but not limited to, paved and unpaved roads, parking areas, roofs, driveways and walkways, from which precipitation runs off rather than infiltrates.

Municipality - an incorporated city, town, village or gore, a fire district established pursuant to state law, or any other duly authorized political subdivision of the state.

NPDES - the National Pollutant Discharge Elimination System for the issuance of permits under section 402 of the federal Clean Water Act and includes the Vermont-administered NPDES program authorized by the federal Environmental Protection Agency.

New Development - the construction of new impervious surface on a tract or tracts of land where no impervious surface previously existed.

New Impervious Surface – an impervious surface created after the effective date of this Rule.

New Stormwater Discharge - a new or expanded discharge of regulated stormwater runoff, subject to the permitting requirements of 10 V.S.A. Chapter 47, which first occurs after June 1, 2002 and has not been previously authorized pursuant to 10 V.S.A. Chapter 47.

Offset or offset project – a state-permitted action or project within a stormwater-impaired water that a discharger or a third person may complete to mitigate the impacts that an existing or proposed discharge or discharges of regulated stormwater runoff has or is expected to have on the stormwater-impaired water.

Offset charge – the amount of sediment load or hydrologic impact that an offset must reduce or control in the stormwater-impaired water in which the offset is located.

Offset charge – the amount of sediment load or hydrologic impact that an offset must reduce or control in the stormwater-impaired water in which the offset is located.

Offset charge capacity – the amount of reduction in sediment load or hydrologic impact that an offset project generates.

Person - any individual, partnership, company, corporation, association, joint venture, trust, municipality, the state of Vermont or any agency, department or subdivision of the state, any federal agency, or any other legal or commercial entity.

Project – new development, expansion, redevelopment and or existing impervious surface that the Secretary is considering for coverage under an individual or general permit or which has received coverage under an individual or general permit.

Regulated stormwater runoff - precipitation, snowmelt, and the material dissolved or suspended in precipitation and snowmelt that runs off impervious surfaces and discharges into surface waters or into groundwater via infiltration.

Redevelopment - the reconstruction of an impervious surface where an impervious surface currently exists, when such reconstruction involves substantial site grading, substantial subsurface excavation, or modification of existing stormwater conveyance such that the total of impervious surface to be constructed or reconstructed is greater than the minimum regulatory threshold. Redevelopment does not mean management activities on impervious surfaces, including any crack sealing, patching, coldplaning, resurfacing, paving a gravel road, reclaiming, or grading treatments used to maintain pavement, bridges and unpaved roads. Redevelopment does not include expansions.

Secretary - the Secretary of the Agency of Natural Resources or the Secretary's duly authorized representative.

Site - either the drainage area that includes all portions of a project contributing stormwater runoff to one or more discharge points; or, the area that includes all portions of disturbed area within a project contributing stormwater runoff to one or more discharge points. The choice of either of these two methods of calculating the site area shall be at the discretion of the designer. In cases where there are multiple discharges to one or more waters, “site” shall mean the total area of the sub-watersheds. For linear projects, including but not limited to highways, roads and streets, the term “site” includes the entire right of way within the limits of the proposed work, or all portions of disturbed area within the right of way associated with the project. The method of calculating the site area for linear projects shall be at the discretion of the designer. Calculations of a site are subject to the Secretary’s review under Section 18-303 of this Rule.

Stand-alone offset project – an offset project that is implemented by a person independent of the permitting of a discharge of regulated stormwater runoff.

Stand-alone offset project NPDES permit – a NPDES permit issued by the Secretary for a stand-alone offset project that is not completed prior to the initiation of the first discharge to which the offset charge capacity is assigned. A stand-alone offset project NPDES permit will be issued by the Secretary pursuant to the Agency’s federally-authorized NPDES program under 10 V.S.A. Section 1258.

Stormwater discharge permit or stormwater permit - a permit issued by the Secretary for the discharge of regulated stormwater runoff to waters that are not stormwater-impaired waters.

Stormwater impact fee – the monetary charge assessed to a permit applicant for the discharge of regulated stormwater runoff to a stormwater-impaired water that mitigates a sediment load level or hydrologic impact that the discharger is unable to control through on-site treatment or completion of an offset on a site owned or controlled by the permit applicant.

Stormwater-impaired water - a state water listed as being impaired principally due to stormwater runoff on the EPA-approved State of Vermont 303(d) List of Waters.

Stormwater-impaired watershed – the total area of land contributing runoff to a stormwater-impaired water.

Stormwater runoff - precipitation and snowmelt that does not infiltrate into the soil, including material dissolved or suspended in it, but does not include discharges from undisturbed natural terrain or wastes from combined sewer overflows.

Substantially deteriorated - the condition of a stormwater treatment practice that would necessitate repair or reconstruction beyond that which would be considered routine, periodic maintenance for a system of similar design.

Total Maximum Daily Load or TMDL – the calculations and plan for meeting water quality standards approved by the U.S. Environmental Protection Agency (EPA) and prepared pursuant to 33 U.S.C. 1313(d) and federal regulations adopted under that law.

Tract or tracts of land - a portion of land with defined boundaries created by a deed. A deed may describe one or more tracts.

Water Quality Remediation Plan or WQRP – a plan, other than a TMDL or sediment load allocation, designed to bring an impaired water body into compliance with applicable water quality standards in accordance with 40 C.F.R. 130.7(b)(1)(ii) and (iii).

Watershed - the total area of land contributing runoff to a specific point of interest within a receiving water.

Watershed Improvement Permit – a general permit specific to a stormwater-impaired water that is designed to apply management strategies to existing and new discharges and that includes a schedule of compliance of no longer than five years reasonably designed to assure attainment of the Vermont water quality standards in the receiving waters.

Vermont Stormwater Management Manual - the Agency of Natural Resources' stormwater management manual.

303(d) List - the EPA-approved State of Vermont 303(d) List of Waters prepared pursuant to 33 U.S.C. 1313(d).

The following definition is deleted from the Glossary:

~~Designer – means an individual whose qualifications are acceptable to the Secretary. The Secretary may require that a design be prepared by a professional engineer licensed in the State of Vermont, as necessary to protect the public or the environment.~~

The following definition is modified in the Glossary:

~~Off-Site – Land within the development's a project's drainage area that is not owned or controlled by the applicant characterized as being part of the site.~~

Section B – Amendments made to the 5th Printing

3.0 Introduction

In an effort to apply a more comprehensive site-design approach to stormwater management, ~~six~~ seven non-structural practices are set forth in this chapter which, if used properly, can result in the granting of a *stormwater credit to a site designer*. *A stormwater credit can reduce the required water quality, and recharge volume, and*

channel protection volumes, thereby reducing the size and cost of structural STPs. **The use of the practices set forth in this section to obtain stormwater credits is strictly optional and voluntary.**

Stormwater credits can be obtained through the use of the following ~~six~~ seven groups of non-structural practices:

- Credit 1. Natural Area Conservation
- Credit 2. Disconnection of Rooftop Runoff
- Credit 3. Disconnection of Non-Rooftop Runoff
- Credit 4. Stream Buffers
- Credit 5. Grass Channels
- Credit 6. Environmentally Sensitive Rural Development
- Credit 7. Watershed Hydrology Protection Credit

This section describes each of the credits for the ~~six~~ seven groups of non-structural practices and specifies minimum criteria to be eligible for the credit.

3.7 Watershed Hydrology Protection Credit

This credit is applicable to high elevation renewable energy projects and may be applied when a group of practices are used to protect water quality. High elevation is defined as mountainous terrain and shall include locations exceeding 1,500 feet in elevation, or as otherwise determined by the Secretary based on an evaluation of site specific conditions including topographic relief relative to surrounding lands, and slope. The Watershed Hydrology Protection Credit is applicable to all portions of a project that are determined to be “high elevation” and adjoining project lands at lower elevation that are otherwise able to meet the credit criteria. The WQv, Rev, and CPv requirements are completely met for portions of a project the discharges from which satisfy credit criteria.

All new development will be designed, constructed, and maintained to prevent the undue alteration of the site’s natural hydrology. This includes maintaining natural forest cover, and protecting the site’s surface and subsurface drainage through the promotion of runoff dispersal, the preservation of natural surface and sub-surface drainage features, and the maintenance of the natural groundwater conditions.

1. Minimum Criteria for Credit

1.1. Impervious Cover

Impervious cover, in aggregate, shall not exceed 5% in any watershed within the site as measured from the project’s most downstream discharge point to any given receiving water. Additionally, if the impervious cover exceeds 5% at any given discharge point, the pre-routed post-developed discharge shall not exceed 2 cubic feet per second. This requirement is only applicable for discharges relying on the subject credit for satisfying the requirements of CPv.

1.2. Forest Cover

The contributing watershed within the site shall be maintained at 90% forested land. This requirement is only applicable for discharges relying on the subject credit for satisfying the requirements of CPv. Existing meadow that is managed to allow the meadow to revert to a forested condition may be considered “forested” for purposes of this subsection. Silvicultural activities, including logging, are allowed provided the lands are under a forest management plan approved by the Agency.

1.3. Stream Buffers

Stream buffers or “protective strips” shall be maintained in accordance with the following standards:

Except for necessary construction of stream crossings, a protective strip shall be left along streams and other bodies of water in which only light thinning or selection harvesting can occur so that breaks made in the canopy are minimal and a continuous cover is maintained

The width of the protective strip shall be according to table 1. Distance from stream shall be from top of bank.

Table 1: Protective Strip Width Guide:

<u>Slope of land Between Roads and Stream Banks or Lake Shores(%)</u>	<u>Width of Strip Between Roads and Stream (Feet Along Surface of Ground</u>
<u>0-10%</u>	<u>50</u>
<u>11-20%</u>	<u>70</u>
<u>21-30%</u>	<u>90</u>
<u>31-40%*</u>	<u>110</u>

*Add 20 feet for each additional 10 percent side slope

2. Runoff Management

There are two allowable approaches to managing road runoff: uncollected runoff is managed under “Disconnection Adjacent to Downhill Side of the Road”; collected runoff from ditches is managed under “Disconnection via Level Spreader.” General requirements apply to both approaches. Non-road runoff may be disconnected under either approach with the additional provision that the disconnection flow path is a minimum of twice the length of contributing flow path.

2.1. Collection and Bypass of Runoff and Groundwater

Runoff from impervious surfaces shall be managed in accordance with the following criteria.

2.1.1. Stone Lining Ditches

All road ditches in excess of 5% slope shall be stone lined per the “Lined Waterway” specifications in the Vermont Standards and Specifications for Erosion Prevention and Sediment Control. Projects meeting the requirements of this subsection are not required to install permanent check dams as described in section 2.1.2.

2.1.2. Check Dams

All road ditches in excess of 5% slope shall have permanent stone check dams installed per the following standards described below. Projects meeting the requirements of this subsection are not required to install stone lined ditches as described in section 2.1.1.

Spacing: The check dams shall be spaced as necessary in the channel so that the crest of the downstream dam is at the elevation of the toe of the upstream dam. This spacing is equal to the height of the check dam divided by the channel slope.

Therefore:

$$S = h/s$$

Where:

S = spacing interval (ft.)

h = height of check dam (ft.)

s = channel slope (ft./ft.)

Stone size: Use a well graded stone matrix 2 to 9 inches in size.

The overflow of the check dams will be stabilized to resist erosion that might be caused by the check dam. Check dams shall be anchored in the channel by a cutoff trench 18 inches wide and 6 inches deep and lined with filter fabric to prevent soil migration.

2.1.3. Cross Drainage

Provide frequent cross drainage under roads. Each roadway section aligned across a slope must be constructed to provide for the passage of uphill surface flows under the roadway using culverts, rock sandwiches or other methods to convey flows to the down-slope side of the travel-way. Unless otherwise required due to the presence of groundwater or other drainage features, the distances between drainage structures shall be as follows in the Table 2.

Road Grade (percent)	Distance Between Structures
1	400
2	250
5	135
10	80
15	60
20	45
25	40
30	35
40	30

Where the travel-way crosses a permanent or intermittent stream channel or swale, the water must be passed under the travel way and returned to the natural channel on the downhill side of the travel-way.

2.2. Groundwater Interception

Avoid intercepting the groundwater table. Where medium to coarse textured soils occur with potential for significant flow of shallow sub-surface water, including oxygenated water, the roadway must be elevated to avoid ditch and slope cuts into the seasonal high groundwater table wherever feasible. For those road sections where ditch cuts or slope cuts into the groundwater table are unavoidable, measures such as use of French drains, french mattresses (i.e. mattress shaped structure made of coarse aggregate), or rock sandwiches, must be used to convey groundwater wherever encountered, and to redistribute the seepage flow to a natural vegetated area on the down-slope side of the travel-way to prevent creating a channel. The length of the flow path in the vegetated area must be at least 50 feet. Where sub-surface drainage channels are encountered with flows too great to pass through a rock sandwich, a culvert must be installed to allow the flow to pass under the road and reconnect to the subsurface drainage channel on the down-slope side of the road.

2.3. Redistribution and Disconnection of Stormwater

Redistribution of stormwater discharges. A project discharging concentrated stormwater runoff through a ditch or other conveyance structure shall convert the concentrated flow to sheet flow to prevent erosion of the downstream receiving area per the Level Spreader specifications. Non-collected stormwater shall be managed in accordance with the Disconnection Adjacent to the Downhill Side of Road specifications. The general requirements (2.3.1. through 2.3.5) are applicable regardless of approach.

2.3.1. General- Topography

The topography of a disconnection area must be such that stormwater runoff will remain generally well-distributed. Flow paths across areas that will result in significant collection or channelization is not allowed.

2.3.2. General- Vegetative cover

The vegetative cover type of a disconnection must be either forest or meadow that is allowed to regenerate to forest. In most instances the sizing of a disconnection varies depending on vegetative cover type.

2.3.3. General- Forest disconnection

A forest disconnection must have continuous canopy cover with minimal B-line stocking as determined by USDA Forest Service Silvicultural Guides, and must be maintained as such. A forested disconnection must also have an undisturbed layer of duff covering the mineral soil. Activities that may result in disturbance of the duff layer are prohibited in a disconnection. Silvicultural activities shall be limited to harvesting in dry or winter conditions, with no construction of skidder trails, roads, or landings.

2.3.4. General- Meadow disconnection

A meadow disconnection must have a dense cover of grasses, or a combination of grasses and shrubs or trees in the existing condition. A disconnection using a meadow must be allowed to regenerate into forest. If a disconnection is not located on natural soils, but is constructed on fill or reshaped slopes, the constructed disconnection area shall be constructed per the requirements of section 2.3.6.1.

2.3.5. General- Mixed meadow and forest disconnection

If a disconnection is part meadow and part forest, the required sizing of a disconnection must be determined as a weighted average, based on the percent of a disconnection in meadow and the percent in forest, of the required sizing for meadow and forest disconnections.

2.3.6. Disconnection Adjacent to the Down Hill Side of Road Specifications

A disconnection adjacent to the down hill side of a road may only be used when a disconnection is located such that the runoff from the road surface and shoulder sheets immediately into a disconnection. Required disconnection design and sizing for this type of disconnection does not vary with soil type or slope, except that a disconnection meeting this standard is not allowed on soils identified as wetland soils or on natural slopes in excess of 30%.

2.3.6.1. Flow Path Sizing for Disconnection Adjacent to the Downhill Side of Road

Flow path sizing depends on the vegetative cover type of a disconnection and the width of road draining to a disconnection as indicated in the Table 3.

Table 3: Flow Path Sizing		
Road Width (feet)	Length of flow path for a forested disconnection (feet)	Length of flow path for a meadow disconnection (feet)
Maximum of 20	55	80
Greater than 20	75	100

The fill-slope of the road bed may be included as part of a meadow disconnection only if it is designed and constructed to allow infiltration, and provided that vegetation clearing associated with road construction is limited to the extent necessary to accommodate the road’s purpose. Design and construction to allow infiltration includes, but is not limited to, the in-slope fill material having slopes no steeper than 3:1; constructing a minimum 3” thick top layer of stump grindings; and allowing the surface to re-vegetate naturally. Additionally, fill materials shall consist of well-drained soils or stone.

2.3.7. Disconnection via Level Spreader

The Level Spreader Disconnection shall be used for collected runoff, including ditch turn outs. Collected runoff shall be diverted to a stone-bermed level-lip spreader that distributes runoff into a disconnection. No areas other than the road surface, road shoulder, road ditch, and ditch back slopes may be directed to the level lip spreader.

2.3.7.1. Level Spreader Discharge Requirements

The peak stormwater flow rate to a level spreader from a 10-year, 24-hour storm must be less than 0.25 cubic feet per second (0.25 cfs) per foot length of level spreader lip.

2.3.7.2. Level Spreader Stone Berm Specifications

The level spreader shall consist of a stone berm constructed along the contour. It must be at least one- foot high and two feet across the top with 2:1 side slopes. Stone for the berm must consist of sound durable rock that will not disintegrate by exposure to water or weather. Fieldstone, rough quarried stone, blasted ledge rock or tailings may be used. The rock must be well-graded with a median size of approximately 3 inches and a maximum size of 6 inches.

2.3.7.3. Level Spreader Disconnection Lengths

Disconnection flow path on forested land shall be a minimum of 150 feet. Disconnection flow path on meadow land shall be a minimum of 200 feet. A disconnection meeting this standard is not allowed on soils identified as wetland soils or on natural slopes in excess of 30%.

3. Application Information Requirements

In addition to all other application requirements, applications using this credit shall, at a minimum include the following information. All soils and drainage information must be collected or verified in the field by a qualified professional.

Site plans with five-foot elevation contours for the site and all areas relied upon for disconnection.

Identify all surface water features, including seeps, wetlands, and vernal pools within 150' upslope of the limits of disturbance, and within the required distances of all down-slope areas relied upon for a disconnection (e.g. within 75 feet for disconnection on the downhill side of the road in a forested condition).

Identify all surface channels with potential to concentrate runoff within 150' upslope of the limits of disturbance, and within the required distances of all down-slope areas relied upon for a disconnection (e.g. within 75 feet for disconnection on the downhill side of the road in a forested condition).

Identify all areas with potential for significant flow of shallow groundwater flow, including identification of oxyaquic soils, or wet mineral soils that lack redoximorphic features.

The extent of soils characterization may be reduced for portions of a project where the roadway is designed to accommodate the likely maximum surface or shallow groundwater flow per the specifications of this credit.

The requirements of this sub-section are intended solely for purposes of stormwater management and are not intended to supersede any other non-Stormwater Program requirements related to the identification of any natural resource features.

3.7 3.8 Dealing with Multiple Credits

3.8 3.9 Other Strategies to Reduce Impervious Cover

Glossary

Impervious Surface - those man made surfaces, including, but not limited to, paved and unpaved roads, parking areas, roofs, driveways and walkways, from which precipitation runs off rather than infiltrates; §1264(a)(6). For purposes of this Manual, pervious or porous pavement, concrete, pavers and similar materials are not considered impervious when design specifications demonstrate that the material in question has the capacity to infiltrate the one-year storm, under a type II distribution. In assessing the infiltrative capacity the designer shall account for factors related to the specific application, including the affect of base and sub-base materials, slope, and maintenance practices.