

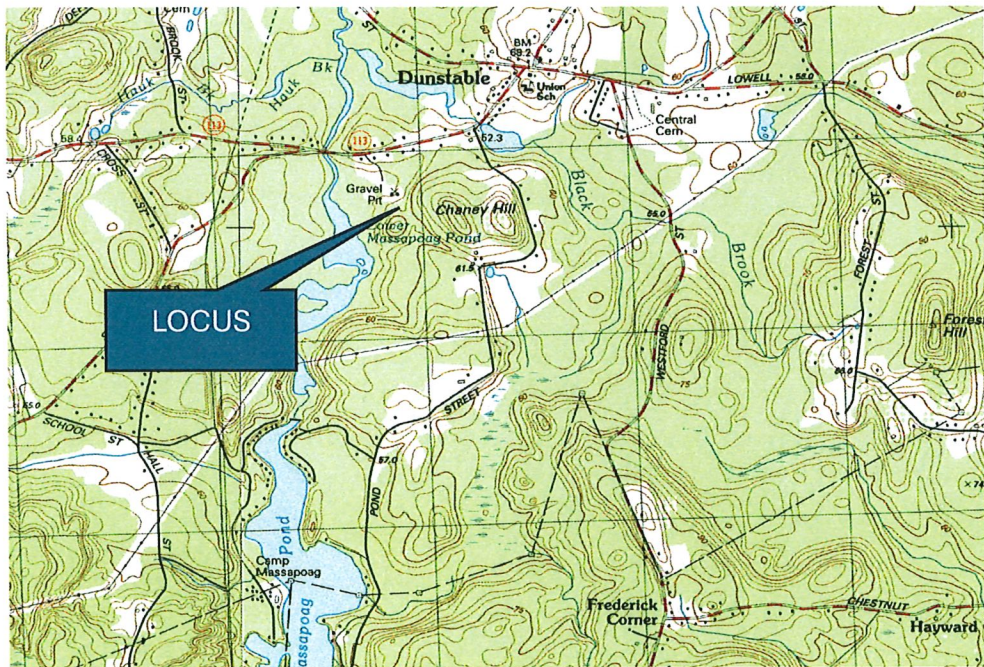


HALEY WARD®

STORMWATER ANALYSIS

MCO COTTAGE RENTALS
PLEASANT STREET
Dunstable, MA

APPLICANT:
MCO Cottage Rentals
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Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the [Massachusetts Stormwater Handbook](#). The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.¹ This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8²
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

¹ The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

² For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.



Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

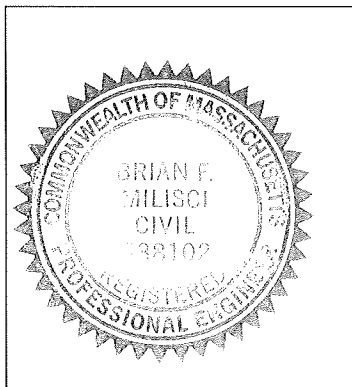
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



B. F. Milisci 4/7/25
Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

- ☒ New development
- ☐ Redevelopment
- ☐ Mix of New Development and Redevelopment



Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☐ No disturbance to any Wetland Resource Areas
- ☒ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☒ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
 - ☐ Credit 1
 - ☐ Credit 2
 - ☐ Credit 3
- ☐ Use of "country drainage" versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☐ Other (describe): _____

Standard 1: No New Untreated Discharges

- ☒ No new untreated discharges
- ☐ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☐ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.



Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

- ☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.
- ☒ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.
- ☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

- ☐ Soil Analysis provided.
- ☒ Required Recharge Volume calculation provided.
- ☐ Required Recharge volume reduced through use of the LID site Design Credits.
- ☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.
 - ☐ Static
 - ☒ Simple Dynamic
 - ☐ Dynamic Field¹
- ☒ Runoff from all impervious areas at the site discharging to the infiltration BMP.
- ☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.
- ☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.
- ☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:
 - ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
 - ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
 - ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
 - ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.
- ☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.
- ☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

¹ 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.



Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

- ☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.
- ☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
 - Provisions for storing materials and waste products inside or under cover;
 - Vehicle washing controls;
 - Requirements for routine inspections and maintenance of stormwater BMPs;
 - Spill prevention and response plans;
 - Provisions for maintenance of lawns, gardens, and other landscaped areas;
 - Requirements for storage and use of fertilizers, herbicides, and pesticides;
 - Pet waste management provisions;
 - Provisions for operation and management of septic systems;
 - Provisions for solid waste management;
 - Snow disposal and plowing plans relative to Wetland Resource Areas;
 - Winter Road Salt and/or Sand Use and Storage restrictions;
 - Street sweeping schedules;
 - Provisions for prevention of illicit discharges to the stormwater management system;
 - Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
 - Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
 - List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.
- ☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.
 - ☒ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:
 - ☐ is within the Zone II or Interim Wellhead Protection Area
 - ☒ is near or to other critical areas
 - ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
 - ☐ involves runoff from land uses with higher potential pollutant loads.
 - ☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.
 - ☐ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.



Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

- ☒ The BMP is sized (and calculations provided) based on:
 - ☒ The ½" or 1" Water Quality Volume or
 - ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.
- ☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.
- ☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

- ☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.
- ☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted **prior to** the discharge of stormwater to the post-construction stormwater BMPs.
- ☐ The NPDES Multi-Sector General Permit does **not** cover the land use.
- ☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.
- ☐ All exposure has been eliminated.
- ☐ All exposure has **not** been eliminated and all BMPs selected are on MassDEP LUHPPL list.
- ☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

- ☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.
- ☐ Critical areas and BMPs are identified in the Stormwater Report.



Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

- ☐ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:
 - ☐ Limited Project
 - ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
 - ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
 - ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
 - ☐ Bike Path and/or Foot Path
 - ☐ Redevelopment Project
 - ☐ Redevelopment portion of mix of new and redevelopment.
- ☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.
- ☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
 - Construction Period Operation and Maintenance Plan;
 - Names of Persons or Entity Responsible for Plan Compliance;
 - Construction Period Pollution Prevention Measures;
 - Erosion and Sedimentation Control Plan Drawings;
 - Detail drawings and specifications for erosion control BMPs, including sizing calculations;
 - Vegetation Planning;
 - Site Development Plan;
 - Construction Sequencing Plan;
 - Sequencing of Erosion and Sedimentation Controls;
 - Operation and Maintenance of Erosion and Sedimentation Controls;
 - Inspection Schedule;
 - Maintenance Schedule;
 - Inspection and Maintenance Log Form.
- ☐ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.



Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

- ☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has **not** been included in the Stormwater Report but will be submitted **before** land disturbance begins.
- ☐ The project is **not** covered by a NPDES Construction General Permit.
- ☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.
- ☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

- ☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:
 - ☒ Name of the stormwater management system owners;
 - ☒ Party responsible for operation and maintenance;
 - ☒ Schedule for implementation of routine and non-routine maintenance tasks;
 - ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
 - ☐ Description and delineation of public safety features;
 - ☐ Estimated operation and maintenance budget; and
 - ☒ Operation and Maintenance Log Form.
- ☐ The responsible party is **not** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:
 - ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
 - ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

- ☐ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;
- ☒ An Illicit Discharge Compliance Statement is attached;
- ☐ NO Illicit Discharge Compliance Statement is attached but will be submitted **prior to** the discharge of any stormwater to post-construction BMPs.

PROJECT TYPE

The project type is a New Development. The project consists of the construction of forty-eight (48) residential units in a total of thirty-six (36) buildings with associated access roadway, driveways, parking areas, utility installation, and grading.

LID MEASURES

To the extent practicable, the proposed project was designed to avoid disturbance to wetland resource areas and minimize disturbance to existing wooded area(s) on the site. The proposed buildings have been sited as far from the wetland buffer zone associated with jurisdictional wetland areas as described in the Wetland Protection Act (310 CMR 10.00) as possible.

However, six (6) of the proposed buildings are within the limits of the 100-year flood elevation (bordering land subject to flooding, BLSF). The project plans call for the “filling” of the BLSF in the vicinity of these units and the compensation of the lost flood storage areas elsewhere on the site. As proposed, there will be more flood storage volume on the subject site post-development than exists currently pre-development. At project completion, all of the proposed buildings will be outside the 100-yr flood storage elevation.

STANDARD 1: No New Untreated Discharges

The project does not include any new untreated discharges. The proposed project's stormwater management network provides treatment of stormwater runoff from all impervious surfaces including building roof area and all paved areas. All collected stormwater is treated and attenuated by on-site BMP's and underground recharge areas prior to discharge.

STANDARD 2: Peak Rate Attenuation

The project has been designed with stormwater controls such that the post-development peak rates of run-off from the project are consistent or less than pre-development rates. Please refer to Stormwater Analysis report generated for the project.

STANDARD 3: Recharge

The total increase in impervious area for the project is 135,733± square feet. The impervious area is broken down as follows:

Roof Area = 51,428± square feet
Roadway & Parking Areas = 77,769± square feet
Sidewalks = 6,536± square feet

Stormwater runoff from the roof areas of the individual dwellings will be captured and directed to individual subsurface recharge systems.

Stormwater runoff from the remaining impervious areas within the project site (roadway, driveway, parking areas and sidewalks) will be collected by deep-sump and hooded catch basins and directed to one of four (4) subsurface recharge systems.

The amount of impervious area tributary to each of the subsurface recharge areas is as follows:

Recharge Area "A" = 13,360 sq. ft.

Recharge Area "B" = 31,350 sq. ft.

Recharge Area "C" = 16,340 sq. ft.

Recharge Area "D" = 23,255 sq. ft.

The required recharge volume is calculated as follows:

$$Rv = F \times \text{impervious area}$$

Recharge System "A"

Net increase in Impervious Area = 13,360 sq. ft

100% - "A" soil group

$$Rv = (0.60 \text{ in}/12 \text{ in}/\text{ft})(13,360 \text{ sq. ft.}) = 668 \text{ cu. ft.}$$

Utilizing the "Simple Dynamic" Method, the storage volume required is determined as follows:

$$Bot.Area (A) = Rv/(nD + KT)$$

D=depth of system

K=hydraulic conductivity

T=drawdown during peak of storm

$$A = 668 \text{ cu. ft.}/[0.40 \times 0.50\text{ft} + (8.27''/\text{hr}/12''/\text{ft} \times 2 \text{ hr})] = 375.2 \text{ sq. ft.}$$

$$\text{Volume} = A \times nD$$

$$\text{Volume required} = 375.2 \text{ sq. ft.} \times 0.40 \times 0.5 \text{ ft.} = 75 \text{ cu. ft.}$$

Volume provided below outlet:

$$\text{volume of stone bed} = 51.84\text{-ft L} \times 25.25\text{-ft W} \times 0.50\text{-ft} \times 0.40 = 261.8 \text{ cu. ft.}$$

$$261.8 \text{ cu. ft.} > 75 \text{ cu. ft.}$$

Recharge System "B"

Net increase in Impervious Area = 31,350 sq. ft

100% - "A" soil group

$$Rv = (0.60 \text{ in}/12 \text{ in}/\text{ft})(31,350 \text{ sq. ft.}) = 1,568 \text{ cu. ft.}$$

Utilizing the "Simple Dynamic" Method, the storage volume required is determined as follows:

$$Bot.Area (A) = Rv/(nD + KT)$$

D=depth of system

K=hydraulic conductivity

T=drawdown during peak of storm

$$A = 1,568 \text{ cu. ft.}/[0.40 \times 0.50\text{ft} + (8.27''/\text{hr}/12''/\text{ft} \times 2 \text{ hr})] = 994 \text{ sq. ft.}$$

$$\text{Volume} = A \times nD$$

$$\text{Volume required} = 994 \text{ sq. ft.} \times 0.40 \times 0.5 \text{ ft.} = 199 \text{ cu. ft.}$$

Volume provided below outlet:

$$\text{volume of stone bed} = 73.2\text{-ft L} \times 44.5\text{-ft W} \times 0.50\text{-ft} \times 0.40 = 651.5 \text{ cu. ft.}$$

$$651.5 \text{ cu. ft.} > 199 \text{ cu. ft.}$$

Recharge System "C"

Net increase in Impervious Area = 16,340 sq. ft

100% - "A" soil group

$$R_v = (0.60 \text{ in}/12 \text{ in}/\text{ft})(16,340 \text{ sq. ft.}) = 817 \text{ cu. ft.}$$

Utilizing the "Simple Dynamic" Method, the storage volume required is determined as follows:

$$\text{Bot. Area } (A) = R_v / (nD + KT)$$

D=depth of system

K=hydraulic conductivity

T=drawdown during peak of storm

$$A = 817 \text{ cu. ft.} / [0.40 \times 0.50 \text{ ft} + (8.27''/\text{hr}/12''/\text{ft} \times 2 \text{ hr})] = 518 \text{ sq. ft.}$$

$$\text{Volume} = A \times nD$$

$$\text{Volume required} = 518 \text{ sq. ft.} \times 0.40 \times 0.5 \text{ ft.} = 104 \text{ cu. ft.}$$

Volume provided below outlet:

$$\text{volume of stone bed} = 73.2\text{-ft L} \times 25.25\text{-ft W} \times 0.50\text{-ft} \times 0.40 = 370 \text{ cu. ft.}$$

$$370 \text{ cu. ft.} > 104 \text{ cu. ft.}$$

Recharge System "D"

Net increase in Impervious Area = 23,255 sq. ft

100% - "A" soil group

$$R_v = (0.60 \text{ in}/12 \text{ in}/\text{ft})(23,255 \text{ sq. ft.}) = 1,163 \text{ cu. ft.}$$

Utilizing the "Simple Dynamic" Method, the storage volume required is determined as follows:

$$\text{Bot. Area } (A) = R_v / (nD + KT)$$

D=depth of system

K=hydraulic conductivity

T=drawdown during peak of storm

$$A = 1,163 \text{ cu. ft.} / [0.40 \times 0.50 \text{ ft} + (8.27''/\text{hr}/12''/\text{ft} \times 2 \text{ hr})] = 737 \text{ sq. ft.}$$

$$\text{Volume} = A \times nD$$

$$\text{Volume required} = 737 \text{ sq. ft.} \times 0.40 \times 0.5 \text{ ft.} = 147.4 \text{ cu. ft.}$$

Volume provided below outlet:

$$\text{volume of stone bed} = 51.84 \text{ L} \times 49.00\text{-ft W} \times 0.50\text{-ft} \times 0.40 = 508 \text{ cu. ft.}$$

$$508 \text{ cu. ft.} > 147.4 \text{ cu. ft.}$$

The drawdown time for each infiltration system is calculated as follows:

$$\text{Drawdown Time} = .R_v / (K)(\text{Bottom Area})$$

Recharge System "A"

$$R_v = 668 \text{ cu. ft.}$$

$$K = 8.27 \text{ in}/\text{hour}$$

$$\text{Total Bottom Area} = 51.84 \times 25.25 = 1,309 \text{ sq. ft.}$$

$$\text{Time} = 668 \text{ cu. ft.} / [(8.27 \text{ in}/\text{hour}/12 \text{ in}/\text{ft})(1,309 \text{ sq. ft.})] = 0.74 \text{ hours} < 72 \text{ hours}$$

Recharge System “B”

$R_v = 1,568 \text{ cu. ft.}$

$K = 8.27 \text{ in/hour}$

Total Bottom Area = $73.20 \times 44.50 = 3,258 \text{ sq. ft.}$

Time = $1,568 \text{ cu. ft.} / [(8.27 \text{ in/hour} / 12 \text{ in/ft})(3,258 \text{ sq. ft.})] = 0.69 \text{ hours} < 72 \text{ hours}$

Recharge System “C”

$R_v = 817 \text{ cu. ft.}$

$K = 8.27 \text{ in/hour}$

Total Bottom Area = $73.20 \times 25.25 = 1,848 \text{ sq. ft.}$

Time = $817 \text{ cu. ft.} / [(8.27 \text{ in/hour} / 12 \text{ in/ft})(1,848 \text{ sq. ft.})] = 0.64 \text{ hours} < 72 \text{ hours}$

Recharge System “D”

$R_v = 1,163 \text{ cu. ft.}$

$K = 8.27 \text{ in/hour}$

Total Bottom Area = $51.84 \times 49.00 = 2,540 \text{ sq. ft.}$

Time = $1,163 \text{ cu. ft.} / [(8.27 \text{ in/hour} / 12 \text{ in/ft})(2,540 \text{ sq. ft.})] = 0.66 \text{ hours} < 72 \text{ hours}$

The estimated seasonal high groundwater has been determined to be no less than 2-ft below the bottom of the infiltration system(s).

STANDARD 4: Water Quality

See Standard 9 for information in regards to Long Term Pollution Prevention Plan.

All stormwater runoff from paved areas of the site is intercepted by deep-sump, hooded catch basins prior to discharge to the proposed recharge area(s). Collected and treated runoff exceeds the 80% total suspended solids (TSS) removal criteria as set forth in the MADEP Stormwater Guidelines. Refer to attached TSS Removal worksheet.

The volume of run-off to be treated for water quality is based upon 1.0 inches of run-off times the total impervious area.

$$V_{WQ} = (D_{WQ} / 12 \text{ inches/foot}) * (A_{IMP})$$

$$V_{WQ} = (1.0 \text{ inch} / 12 \text{ inches/foot}) * (135,733 \text{ sq. ft.}) = 11,311 \text{ cu. ft.}$$

Stormwater runoff from roof areas will be collected by subsurface recharge systems for each individual unit. Stormwater runoff from roof areas is not considered “contaminated” and thus can be directed directly into the underlying soil stratum without further treatment.

Stormwater runoff from paved areas of the site is collected by deep sump hooded catch basins (25% TSS removal) and routed through the proposed recharge system (80% TSS removal). The proposed overall treatment train has a TSS removal of 85%.

The proposed recharge systems that receive stormwater runoff from paved areas will also be fitted with Stormtech’s “Isolator Row” technology for additional treatment of collected stormwater. The Isolator Row has shown to have a TSS removal rate of 66%. Therefore, the system provides more than the 44% pre-treatment TSS removal (25% hooded deep-sump catch basins plus isolator row) for infiltration systems discharging in critical areas as well as infiltration systems in rapidly recharging soils.

The storage volume provided within the four (4) recharge chamber systems equals 19,243 cubic feet. The volume

provided within the recharge chambers is greater than the run-off volume required to be treated.

STANDARD 5: Land Uses With Higher Potential Pollutant Loads {LUHPPLs}

Not Applicable. The project does not contain Land Uses With Higher Potential Pollutant Loads (LUHPPLs).

STANDARD 6: Critical Areas

Not applicable. The project does not discharge to a critical area.

STANDARD 7: Redevelopments and Other Projects Subject to the Standards only the max. .Practicable

Not Applicable. The project does not meet the definition of a redevelopment project.

STANDARD 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

Erosion control measures are shown on the design plans. The project will be covered by a NPDES Construction General Permit and a copy of the SWPPP can be provided to the appropriate municipal agencies prior to the commencement of construction.

STANDARD 9: Operation and Maintenance Plan

This project is a privately owned residential development. The applicant, MCO Cottage Rentals, will own and rent all of the units within the development. Ongoing maintenance activities will be the responsibility of MCO Cottage Rentals. An Operation & Maintenance plan has been generated for the proposed stormwater management network and can be found under separate cover.

STANDARD 10: Prohibition of Illicit Discharges

This project is a privately owned residential development. It is not anticipated that there will be any illicit discharges into the Town of Dunstable's stormwater drainage system. Refer to signed Stormwater Illicit Discharge statement included herein.

Stormwater Illicit Discharge Statement

Project: MCO Cottage Rentals

Location: 164 Pleasant Street, Dunstable, MA 660 Main Street, Sturbridge, MA 01827

Project Description: This project involves the construction of a residential community and includes dwelling units, paved access roadways, paved parking areas, soil absorption system (septic system), stormwater management facilities, grading and loaming and seeding.

As defined in the Department of Environmental Protection Stormwater Management Standards, Standard 10 Illicit Discharges - *Illicit discharges to the stormwater management system are discharges that are not entirely comprised of stormwater. Notwithstanding the foregoing, an illicit discharge does not include discharges from the following activities or facilities: firefighting, water line flushing, landscape irrigation, uncontaminated groundwater, potable water sources, foundation drains, air conditioning condensation, footing drains, individual resident car washing, flows from riparian habitats and wetlands, dechlorinated water from swimming pools, water used for street washing and water used to clean residential buildings without detergents.*

Designer Statement:

The proposed stormwater management system has been designed such that there are no illicit discharges connecting to the stormwater system.



Brian F. Milisci, P.E.
Haley Ward, Inc.

Owner Statement:

To the best of our knowledge, there are no illicit discharges connected to the existing on-site stormwater system.



Mark C. O'Hagan
MCO & Associates

INSTRUCTIONS:

- 1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
- 2. Select BMP from Drop Down Menu
- 3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location:

164 Pleasant Street, Dunstable, MA

B	C	D	E	F
BMP ¹	TSS Removal Rate ¹	Starting TSS Load*	Amount Removed (C*D)	Remaining Load (D-E)
	0.00	1.00	0.00	1.00
Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75
Subsurface Infiltration Structure	0.80	0.75	0.60	0.15
	0.00	0.15	0.00	0.15
	0.00	0.15	0.00	0.15

Separate Form Needs to be Completed for Each Outlet or BMP Train

85%

Total TSS Removal =

Contech Model HS36-G

164 Pleasant Street Dunstable,
MA
Haley Ward, Inc.

Project:

Prepared By:

*Equals remaining load from previous BMP (E)

Date: 4/1/2025

which enters the BMP