



## MEMORANDUM

**To:** Richard Harris, Town of South Hadley, Town Planner  
**Cc:**  
**From:** Luke Boucher, P.E.; Green International Affiliates, Inc. (Green)  
**Date:** March 11, 2016  
**Project:** Mount Holyoke College Centralized Dining and Community Center (Green No. 15040)  
**Subject:** MHC – Compliance with Stormwater Management Bylaw

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The memorandum is intended to demonstrate compliance with the requirements of the South Hadley Stormwater Management Bylaw (the Bylaw).

### COMPLIANCE WITH PURPOSE AND AUTHORITY (SECTION 16-1)

- B. The proposed design achieves compliance with the objectives of Section 16-1 of the Bylaw through the following:
1. Reduction of adverse water quality impacts of stormwater discharges to rivers, lakes, reservoirs and streams in order to attain federal water quality standards will be achieved through the reduction of peak runoff rates and the inclusion of new water quality structures.
  2. Prevention of the discharge of pollutants, including hazardous chemicals, into stormwater runoff will be achieved through the reduction of peak runoff rates and the inclusion of new water quality structures. The Long Term Pollution Prevention Plan included in Section 11.0 of the Stormwater Management Report describes measures to be implemented following construction to reduce the discharge of pollutants. Section 10.0 of the Stormwater Management Report describes measures to be implemented during construction to reduce the discharge of pollutants.
  3. The proposed improvements will result in a reduction in peak runoff rates at each design point for the 2-, 10- and 100-year storm events through either reductions in impervious area or through the use of the subsurface detention vault. Due to on-site soil conditions, runoff volume will not be reduced. Infiltration practices were determined to be infeasible due to the presence of silty soils with shallow depth to seasonal high groundwater and low capacity for infiltration (Hydrologic Soil Group D) in on-site areas outside of the proposed building footprint. Refer to Section 5.0 of the Stormwater Management Report for further description of this condition.
  4. Erosion and sedimentation control measures are shown on Sheet C103 and are described in Section 10.0 of the Stormwater Management Report. Peak rates of runoff will be reduced under the proposed condition.
  5. Due to on-site soil conditions, recharge of groundwater aquifers will not be addressed. Infiltration practices were determined to be infeasible due to the presence of silty soils with shallow depth to seasonal high groundwater and low capacity for infiltration (Hydrologic Soil Group D) in on-site areas outside of the proposed building footprint. Refer to Section 5.0 of the Stormwater Management Report for further description of this condition.

6. The only visible stormwater best management practice (BMP) proposed is the rain garden on the west side of the building. The intention of this BMPs is to provide a visually appealing area that also serves to re-use a portion of the roof runoff. As the rain garden is proposed with a subdrain, water will not permanently pool in this BMP.
7. The proposed improvements will result in a reduction in peak runoff rates at each design point for the 2-, 10- and 100-year storm events through either reductions in impervious area or through the use of the subsurface detention vault, maintaining pre-development runoff characteristics after development.
8. Damage to public and private property from flooding is not anticipated, as the proposed improvements will result in a reduction in peak runoff rates at each design point for the 2-, 10- and 100-year storm events
9. Instructions for the long-term maintenance of the stormwater BMPs are described in Section 11.0 of the Stormwater Management Report.
10. Construction site management practices are described in Section 10.0 of the Stormwater Management Report.

## COMPLIANCE WITH PERFORMANCE STANDARDS (SECTION 16-6)

### **1. Minimum Control Requirements**

Sections 3 through 12 of the Stormwater Management Report prepared for this project demonstrate compliance with each of the Massachusetts Stormwater Standards.

### **2. Stormwater Management Measures**

- A. The Bylaw indicates a preference for infiltration, flow attenuation and pollutant removal of on-site runoff by directing it to existing vegetated areas. The project area has very limited existing vegetated areas and the limited vegetated areas are bisected by pedestrian walkways. As a result, directing runoff to discharge to the ground surface in these areas is not feasible.

As a secondary option, the Bylaw identifies recycling of stormwater for industrial uses or irrigation. The design proposes directing rooftop runoff from a portion of the roof area to a proposed rain garden on the west side of the proposed building. Due to shallow depth to groundwater, the proposed rain garden will contain a subdrain. This will allow the rain garden to function as filtration BMP, but not an infiltration BMP.

As a tertiary option, the Bylaw identifies utilizing stormwater detention structures designed so as not to create a permanent pool of water. The design proposes that the majority of the rooftop area will be directed to a proposed subsurface detention vault, which is designed with a low-flow opening at the bottom of the structure to slow the release of stormwater without creating a permanent pool of water.

- B. Infiltration practices were determined to be infeasible due to the presence of silty soils with shallow depth to seasonal high groundwater and low capacity for infiltration (Hydrologic Soil Group D) in on-site areas outside of the proposed building footprint. As indicated in Section 5.0 of the Stormwater Management Report:

*Per Volume 3, Chapter 1 of MADEP’s Massachusetts Stormwater Handbook, “No stormwater recharge systems shall be sited in soils that infiltrate lower than 0.17 inches/hour due to the potential for failure.” Soils classified as HSG “D” have infiltration rates below 0.17 inches/hour and are thereby considered by MADEP as unsuitable for infiltration. While stormwater recharge (Standard 3) is still required for sites comprised entirely of HSG “D”, there is a provision that allows best management practices to infiltrate the required recharge volume only to the maximum extent practicable due to the site being comprised solely of HSG “C” and “D” soils.*

- C. While the project will result in an increase in impervious area, the majority of the new impervious area is the proposed building roof, which carries an effective Total Suspended Solids (TSS) load of 0. As a result, the proposed design actually results in a decrease in impervious areas with a TSS load (walkways, driveways, parking, etc.). As indicated in Section 6.3 of the Stormwater Management Report:

*As the proposed BMPs will result in a reduction in peak rates and the project results in a net decrease in non-roof impervious area, greater TSS removal is anticipated from the existing water quality structure. In addition, the majority of new non-roof areas will be captured via the deep sump inlet structures and routed through in-line water quality structures, which have been sized to remove 80% TSS removal. At the revised loading dock driveway, Deep Sump Catch Basins with Hoods are proposed to capture and treat runoff from the area. Pretreatment for runoff from these areas will be achieved through these deep sump inlet structures. This proposed system will run through a proposed inline water quality structure prior to being directed to the existing offline water quality structure near the discharge to Lower Pond.*

As a result, 80% TSS removal will be achieved for the impervious areas within the project area.

- D. As described in Section 4.0 of the Stormwater Management Report, the proposed improvements will result in a reduction in peak runoff rates prior to discharge into the existing closed-drainage systems. Based on the calculated peak rates of runoff, erosive velocities are not anticipated within the existing closed-drainage systems.
- E. The proposed improvements will result in a reduction in peak runoff rates for the 2-, 10- and 100-year storm events. As a result, no increase in flooding or stream channel erosion is anticipated at a downstream dam, highway, structure, or normal point of restricted stream flow.

### **3. Specific Design Criteria**

- A. Infiltration practices were determined to be infeasible due to the presence of silty soils with shallow depth to seasonal high groundwater and low capacity for infiltration (Hydrologic Soil Group D) in on-site areas outside of the proposed building footprint. Refer to Section 5.0 of the Stormwater Management Report for further description of this condition.
- B. The subsurface detention vault has been designed to comply with the requirements of Vol. 2, Ch. 2 of MassDEP’s Massachusetts Stormwater Handbook, including a drawdown time of less than 72 hours.

- C. The limited vegetated areas downgradient of the development preclude the implementation of swales and depressions, particularly those that exist prior to development.
- D. The limited space along the loading dock driveway and presence of utilities between the proposed building and Lower Lake Road preclude the implementation of swales and depressions in these areas. As a result, a closed drainage system (curb and gutter) is proposed.
- E. Not applicable.
- F. Not applicable.
- G. Not applicable.
- H. Runoff from the loading dock area will be treated by a water quality structure prior to discharge into the existing closed drainage system.
- I. The design is consistent with the requirements of MassDEP’s Massachusetts Stormwater Handbook.

**COMPLIANCE WITH DESIGN REQUIREMENTS FOR EROSION AND SEDIMENT CONTROL PLAN  
(SECTION 16-7)**

**1. Design Requirements**

- A. The total area of disturbance has been limited to the area necessary to achieve the proposed improvements.
- B. Sequencing of activities during construction is described in Section 10.0 of the Stormwater Management Report.
- C. The proposed improvements will result in a reduction in peak runoff rates at each design point for the 2-, 10- and 100-year storm events through either reductions in impervious area or through the use of the subsurface detention vault.
- D. Erosion and sedimentation control measures are shown on Sheet C103 and are described in Section 10.0 of the Stormwater Management Report.
- E. Diversion of water around disturbed areas is described in Section 10.0 of the Stormwater Management Report
- F. Infiltration practices were determined to be infeasible due to the presence of silty soils with shallow depth to seasonal high groundwater and low capacity for infiltration (Hydrologic Soil Group D) in on-site areas outside of the proposed building footprint. Refer to Section 5.0 of the Stormwater Management Report for further description of this condition.
- G. Requirements for the Contractor to install and maintain erosion and sedimentation control measures are included in Section 10.0 of the Stormwater Management Report.
- H. Requirements to minimize off-site transport of sediment are included in Section 10.0 of the Stormwater Management Report.

- I. Requirements for the protection and management of on-site material storage areas are included in Section 10.0 of the Stormwater Management Report.
- J. Requirements for compliance with applicable Federal, State and local laws and regulations including waste disposal, sanitary sewer or septic system regulations, and air quality requirements, including dust control, are included in Section 10.0 of the Stormwater Management Report.
- K. Impacts to habitats mapped by the Massachusetts Natural Heritage & Endangered Species Program as Endangered, Threatened or of Special concern, Estimated Habitats of Rare Wildlife and Certified Vernal Pools, and Priority Habitats of Rare Species are not anticipated. See Figure 4 of the Stormwater Management Report for identification of these protection resource areas.
- L. Requirements for interim and permanent stabilization measures are included in Section 10.0 of the Stormwater Management Report.
- M. Requirements for management of on-site construction and waste materials are included in Section 10.0 of the Stormwater Management Report.
- N. Requirements to minimize off-site transport of sediment are included in Section 10.0 of the Stormwater Management Report.

Please feel free to contact our office should you require additional information or have any questions.

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