



October 20, 2016

Haverhill Conservation Commission
C/O Robert Moore, Jr., Environmental Health Technician
Haverhill City Hall – Room 300
4 Summer Street
Haverhill, MA 01830

**RE: Notice of Intent Application
Proposed Hotel & Retail/Restaurant
401 Lowell Avenue
Haverhill, MA**

Dear Commission Members,

Bohler Engineering has received comments from Eggleston Environmental, dated October 7, 2016, for the proposed improvements to the parcel located at 401 Lowell Avenue in Haverhill, Massachusetts. The comments and responses are summarized below (Eggleston Environmental comments are shown in *italic* text; Bohler Engineering's responses are shown in bold standard text):

- 1. The proposed project qualifies as a partial redevelopment under the Stormwater Standards. It does entail a net increase in total impervious area of about 11,400 sf, and that new impervious area on the post-development site is required to meet the Stormwater Standards fully. The redevelopment component of the project is required to comply with Standards 2 and 3 and the pretreatment and structural best management practice requirements of Standards 4, 5 and 6 to the maximum extent practicable, and with the remainder of the Standards fully. However, as set forth in the MA Stormwater Handbook, "to the maximum extent practicable" means that the proponent has made all reasonable efforts to fully meet all of the Standards, and that the highest practicable level of stormwater management for the project is being implemented. In addition, all redevelopment projects are required to improve existing conditions. Based on the plan submitted, the proposed project would increase the pavement area on the site by about 22,700 sf with the potential to generate high concentrations of oil and grease yet only about 5,700 sf of pavement runoff would be fully treated in accordance with the Standards, and only a small proportion of the post-development impervious cover would be recharged. Particularly given the extent of demolition and new construction associated with this project I believe that significantly more could be done to improve stormwater management on the property and, potentially, to meet the Stormwater Standards fully.*



The project proposes to increase paved surfaces onsite by approximately 22,404sf from the existing condition. The plans have been revised to direct this increase to multiple pretreatment and subsurface infiltration systems onsite. This increase in pavement will be fully treated in accordance with the Standards, and will meet the recharge volume per the Standards and City of Haverhill requirements. Due to limiting available space and existing elevations being maintained onsite, the remaining paved surfaces will be treated to the maximum extent practicable with the use of deep sump and hooded catch basins and a proprietary water quality unit. Refer to the revised plan set and calculations provided in the Stormwater Report.

2. *The proposed plan would create a new untreated discharge (FES 2), which is specifically prohibited under Stormwater Standard 1. Even redevelopment projects must comply fully with Standard 1.*

The plans and calculations have been revised such that discharge from FES 2 to DPP2 will be treated overflow from subsurface infiltration system 2. Stormwater runoff directed to system 2 will fully meet the Standards for pretreatment. All other discharges to DPP2 are associated with runoff from the building roof and landscaped areas. Refer to the updated calculation sheets provided in Appendix 5 of the Stormwater Report for sizing and treatment.

3. *The drainage analysis accounts for drainage onto the CVS property adjacent to the site to the south, but does not include any drainage from the Pentucket Bank property located immediately upgradient at the northeast corner of the site. It should be confirmed that none of the runoff from the bank site runs onto or through the project site.*

Based on field observations and discussions with facilities personnel at the hotel, there is no evidence to suggest that the Pentucket Bank property contributes run-off to or through the project site. A catch basin was observed in the northwest corner of the Pentucket Bank property, but available record drawings do not show this drainage structure tying into the existing hotel drainage system. A 4-inch retaining wall drain was obtained from record drawings which is tied into the hotel drainage system. The wall drain will be connected to the new stormwater management system onsite.

4. *During my site visit I observed a number of roof drains from the existing building that appear to discharge into the ground or onto pervious surfaces, thus providing some degree of groundwater recharge under predevelopment conditions. This has not been factored into either the drainage analysis or the recharge calculations. Under the proposed plan all of the runoff from the new hotel building and most of the parking areas would be discharged directly as surface flow via the two new outfalls; only about 15 percent of the impervious area on the post development site would be directed to recharge facilities.*

Based on field observations and discussions with facilities personnel, the majority of the building roof leaders are collected in perimeter drains and are directly connected to the drainage system. The balance of the roof leaders discharge to the ground surface, and flow into nearby catch basins located in landscaped or paved areas. For this reason, there is minimal groundwater recharge occurring under existing conditions. It should be noted that the plans have been revised to promote new recharge from the roof area of the portion of the hotel building to remain, by connecting roof leaders into a perforated header pipe surrounded by stone.



- The soils on most of the project site, including the proposed infiltration area, are mapped as “urban land” with no Hydrologic Soil Group (HSG) assigned. Some of the surrounding areas are mapped as smoothed Udorthents or Canton fine sandy loams, both of assigned HSG A, so there is a high likelihood that the soils on the site would be suitable for infiltration. The Stormwater Report contains a log from a single test pit conducted in the landscaped area adjacent to Lowell Street that appears to confirm the suitability of the site soils for subsurface infiltration, and indicates a seasonal high groundwater elevation of about 5 feet below grade. Based on these favorable conditions, it is not clear why the proposed plan does not include more groundwater recharge.*

Test pits conducted adjacent to Lowell Avenue indicate a seasonal high groundwater elevation (SHGW) of about 5 feet below grade. Given the high likelihood that the on-site are suitable for infiltration, and the consistency of soil characterization from site explorations, it is presumed that the SHGW is approximately 5’ below existing grade across the site, and infiltration in other parts of the site is achievable. The plans have been revised to relocate the previously proposed infiltration area to a more advantageous location, as well as to add two (2) additional infiltration areas (one subsurface and one open surface basin). All infiltration areas assume a 2’ offset from the bottom of the system to SHGW.

- The location of Test Pit #2 should be shown on the plans. Available data from any other test pits conducted on the site, or the single monitoring well shown on the plans, should also be provided.*

The location of test pits 1 and 2 are indicated on Sheet 5, “Grading and Drainage Plan”, and their associated data is included in Appendix 9 of the Stormwater Report. Discussions with the facilities director at the existing hotel indicate that there is no available information for the monitoring well.

- The drainage analysis assumes exfiltration from the proposed plunge pool. This is inconsistent with both the design of the plunge pool (lined with filter fabric with a low design flow rate) and its location within 50 feet of the offsite wetland. The MA Stormwater Handbook prohibits stormwater infiltration within 50 feet of a wetland.*

The plunge pool has been removed from the proposed site design, and the model has been updated accordingly.

- It is also not clear from the routing diagram, or the calculated runoff rates, how flow is being routed to the plunge pool in the model.*

See comment response #7 above.

- The proposed plan calls for a Stormceptor inlet unit to collect and treat the pavement runoff that drains into the infiltration system, and a larger CDS proprietary separator just upgradient of FES 1. The water quality calculations assume 80% TSS removal in both of the units. The MA Stormwater Handbook considers proprietary separators as providing pretreatment only (e.g. in the range of 25% TSS removal), especially when combined with an upgradient*



catchbasin, hence the proposed treatment train to FES 1 would not fully meet the 80% TSS removal requirement of Stormwater Standard 4.

The water quality structure has been designed by the manufacturer to provide the 1” water quality volume treatment per Massachusetts DEP Standards. The inline CDS unit is equipped with an internal bypass to handle peak flows generated during the 25-year rational storm event. The CDS unit will provide 54% TSS removal.

10. *In order to receive any TSS removal credit WQS2 would also need to be placed in an offline configuration in accordance with DEP requirements.*

WQS-2 is no longer required and has been removed from the proposed site design.

11. *As noted in the Stormwater Report, the project site may constitute a Land Use with Higher Potential Pollutant Loading (LUHPPL) under DEP Stormwater Standard 5, with the potential to generate runoff with high concentrations of oil and grease. If so, the Stormwater Handbook prescribes pretreatment and treatment BMPs to treat the runoff and requires a 1-in water quality volume and 44% TSS removal prior to infiltration. Based on the plan, which shows the discharge from WQS1 routed through an Isolator Row on the subsurface infiltration system, the pavement runoff at the northeastern corner of the site would meet these requirements and the requirements of Standard 4, provided it can be demonstrated that the 1-in water quality volume would be captured and infiltrated. The remaining pavement areas on the site would not meet the requirements of either Standard 4 or Standard 5.*

The increase in paved surfaces from the existing condition is directed to the subsurface infiltration systems and will be pretreated with deep sump and hooded catch basins and isolator rows, ultimately providing over 80% TSS removal prior to infiltration. The required number of isolator rows will be provided to treat the 1” water quality volume, and the 1-inch storm event will be infiltrated. Given that the site is a redevelopment, the remaining paved surfaces onsite will be treated to the maximum extent practicable with the use of deep sump and hooded catch basins and a proprietary water quality. The water quality structure will provide 54% TSS removal prior to discharge. The mass-balance TSS removal rate is 64%.

12. *The FES dimension requirements calculated in accordance with Standard 1 are not represented on the plans. It is also not clear what the basis is for the tailwater assumption in the FES calculations.*

Updated rip rap and apron sizing calculations are provided in Appendix 5 of the Stormwater Report. The tailwater elevations are determined from a table provided in the Civil Engineering Reference Manual for Circular Channel Ratios. Tailwater elevations are determined to be greater than the elevation of the center of the discharge pipe at both FES-1 and FES-2. The FES dimensional requirements calculated are represented on the revised plans.

13. *The plans should identify which design detail/unit WQS 1 & 2 refer to. I also note that the detail for the CDS unit references two different models.*

The plan and details have been updated.



14. *The location of the plunge pool spillway should be shown on the Grading and Drainage Plan.*

The plunge pool has been removed from the proposed site design. In lieu of the plunge pool, the plans have been revised to propose a grass swale along the rear of the existing building. This will allow stormwater to flow freely from FES-1 and eliminate a surcharge conditions in the drainage system. This will ensure treatment of paved surfaces is provided to the maximum extent practicable at WQS-1. The swale will require minor grading within the 25-foot no disturb area (approximately 1,000sf). The swale will be stabilized immediately upon completion of the grading, and no permanent drainage structures are proposed within the 25-foot zone.

15. *As indicated in the Stormwater Checklist, the proposed project entails the disturbance of more than one acre of land and will therefore be subject to EPA's NPDES Construction General Permit (CGP). Prior to the initiation of work the selected contractor will need to file a Notice of Intent for coverage under the CGP, and prepare a Stormwater Pollution Prevention Plan (SWPPP) to be implemented during construction. This requirement should be clearly noted on the plans, and the Conservation Commission should have the opportunity to review the SWPPP prior to the start of work.*

A SWPPP will be prepared prior to the start of construction, and a copy of the draft report will be provided to the City of Haverhill for review and comment. Note #29 on Sheet 2, "General Notes Sheet," indicates that the Contractor is responsible for the maintenance of a SWPPP onsite in compliance with EPA requirements for a site where one (1) acre or more is disturbed by construction activities.

16. *I have the following comments on the Operation and Maintenance (O&M) Plan and Long Term Pollution Prevention Plan included in the Stormwater Report.*

- A) The two plans should be combined into a single standalone document to be used onsite and updated as necessary. The O&M Plan should clearly identify the inspections and maintenance tasks associated with each of the stormwater structures and BMPs on the site, including catchbasins, proprietary separators, isolator row, subsurface infiltration system, plunge pool and stone apron. The LTPPP should outline source control measures specific to the proposed use of the site.*
- B) The catch basins should be cleaned at least once per year and whenever sediment accumulation reaches to within two feet of the outlet.*
- C) The proprietary separators should also be cleaned at least once per year and whenever sediment accumulation reaches the designated thresholds, which should be listed in the report.*
- D) The O&M Plan should clearly state that a vacuum truck is needed to clean the proprietary separators.*
- E) The infiltration system should be inspected each year after a storm of one-inch or more to verify that it is fully drained within 72 hours.*
- F) The LTPPP should address solid waste management and snow storage on the site.*
- G) The plan should include a simple figure showing the locations of all stormwater BMPs to be maintained as well as designated snow storage locations.*
- H) Per DEP requirements, an estimated annual budget for maintenance is required.*



A – F, H) The O&M Plan and LTPPP are typically submitted as separate documents by Bohler Engineering, and have been updated to include the information indicated in your comments above.

G) A plan showing the locations of all stormwater BMPs to be maintained as well as designated snow storage areas is provided in Appendix 7 of the Stormwater Report.

17. Stormwater Standard 10 prohibits all illicit discharges to the stormwater management system and requires proponents to submit an Illicit Discharge Statement demonstrating that no illicit connections exist on the project site. Redevelopment projects must fully comply with this requirement, and must also document all actions taken to identify and remove illicit discharges, including, without limitation, visual screening, dye or smoke testing, and the removal of any sources of illicit discharges to the stormwater management system. Since the proposed plan calls for portions of the existing building and some drainage infrastructure to remain on the site they will need to be thoroughly investigated before such a statement can be made.

Draft language for the Illicit Discharge statement has been included in the Long Term Pollution Prevention Plan in Appendix 7. A statement will be provided in the future upon investigation of the drainage system.

Should you have any questions or require additional information, please do not hesitate to contact us at (508) 480-9900.

Sincerely,

BOHLER ENGINEERING

Michael J. Dryden, Project Manager

Josh G. Swerling, P.E.

Enclosures

CC: Lisa D. Eggleston, P.E., Eggleston Environmental (via hand delivery)
Ash Sangani, Giri Hotels
Lorraine Sheehan, Giri Hotels