

# Horsley Witten Group

*Sustainable Environmental Solutions*

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June 6, 2016

Ms. Jody Kablack  
Director of Planning and Community Development  
Town of Sudbury  
278 Old Sudbury Road  
Sudbury, Massachusetts 01776

Re: Peer Review for Avalon Sudbury  
526 & 528 Boston Post Road  
Sudbury, Massachusetts

Dear Ms. Kablack and Board Members:

The Horsley Witten Group (HW) is pleased to provide the Sudbury Zoning Board of Appeals (ZBA) with this letter report summarizing our initial review of the Avalon Sudbury multi-family housing development (Site). The plans and calculations were prepared for Sudbury Avalon, Inc. (Applicant) by VHB. The project involves the demolition of the small existing buildings located in the northwest corner of the site and the redevelopment of the existing large parking area. The existing building known as the Beltran building and the existing wastewater treatment plant will remain. The proposed project consists of 250 housing units with associated drive aisles, parking, landscaping, utilities, and a stormwater management system. The proposed stormwater management system consists of subsurface infiltration trenches for recharge of clean roof runoff, and best management treatment trains consisting of deep sump catch basins and either proprietary water quality units, bioretention areas, and/or a subsurface infiltration system. The project is within the jurisdiction of the Sudbury Conservation Commission and is required to file a Notice of Intent.

The following documents and plans, prepared by VHB, were reviewed by HW:

- Preliminary Stormwater Management Master Plan, revised April 2016
- Avalon Sudbury, Stormwater Management Report, dated May 2016
- Grading, Drainage, and Erosion Control Plan (Sheet Number C-5.1 and C-5.2 latest revision date May 23, 2016)

## **Stormwater Review**

HW has reviewed the proposed stormwater management design as per the standards listed in the Massachusetts Stormwater Handbook (MSH) dated February 2008 and the Town of Sudbury Stormwater Management Bylaw Regulations (Stormwater Bylaws), revised January 23, 2013.

In accordance with the Comprehensive Permit Law, this project is required to comply with the performance standards of the MSH. Therefore, we have used the MSH as the basis for organizing our comments.

1. *Standard 1: No new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*

The Applicant has stated that all stormwater will be discharged to existing closed drainage systems and does not propose any new outfalls to wetlands. To verify that the Avalon Sudbury redevelopment project is in compliance with Standard 1, HW recommends that the Applicant clarify which existing pipes associated with the various wetland resources areas will remain. It appears that the proposed development will be discharging into the large existing stormwater basin via two existing drain pipes. The existing drain pipes are discharging into recently refurbished forebays which should alleviate potential erosion into this wetland resource area.

HW recommends that the Applicant confirm that these are the only two outfalls impacted by the proposed development and clarify which existing drain lines within the limit of work are to be maintained. For instance it is not clear if the existing outlet from the wetland (WF6) along the southwest property line is being maintained as it is located beneath proposed Bio-retention Basin P-A. Furthermore it is not clear if the existing drain lines associated with the wetland (WF5) located near the north property line will remain.

2. *Standard 2: Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.*

The proposed stormwater management system is consistent with the previously submitted HydroCAD modeling analysis in the Master Plan submission. The Preliminary Stormwater Management Plan revised in April 2016 provided the HydroCAD analysis which illustrated that the entire 50 acre redevelopment project is being designed so that post-development rates do not exceed pre-development peak discharge rates. The proposed impervious cover for the Avalon Sudbury development will be reduced from existing conditions and is less than or equivalent to the Master Plan proposed impervious area as listed in Table 1: Proposed Conditions Cover Comparison. The Applicant appears to be in compliance with Standard 2.

3. *Standard 3 requires that the annual recharge from post-development shall approximate annual recharge from pre-development conditions.*

- a. The Applicant has noted that the impervious area of the entire site will be reduced under the proposed layout and therefore the recharge criteria are met. To provide additional recharge the Applicant is proposing infiltration trenches around the perimeter of each building to infiltrate the roof runoff and a subsurface infiltration system as well as two bioretention areas to infiltrate portions of the access drive, walkways, and driveways. These

methods of infiltrating are considered acceptable best management practices (BMPs) per the MSH. It appears that the Applicant is in compliance with Standard 3.

- b. Three soil test pits have been performed to verify soils and separation to groundwater at the two bioretention areas (Pond P-A and P-B) as well as the subsurface infiltration system (Pond P-C). In accordance with Volume 2, Chapter 2, page 104 of the MSH, a second test pit should be conducted within the infiltration system. Mounding calculations may be required if the vertical separation from the bottom of the infiltration practices to the estimated seasonal high groundwater is less than four feet and the systems will infiltrate the 10-year storm event. HW recommends that the Applicant confirm whether a mounding analysis is required and provide the same if applicable. HW further recommends that additional test pits are conducted prior to construction in accordance with the MSH.
  - c. HW recommends that a detail of the subsurface infiltration system including DMH 303 and OCS 302 be provided as part of the plan set. The HydroCAD modeling calculations for Pond P-C are difficult to follow without further detail, specifically in regards to the primary outlet. The HydroCAD modeling includes an 18 inch culvert at invert 145.40; however HW was not able to confirm this culvert on the plan.
4. *Standard 4 requires that the stormwater system be designed to remove 80% Total Suspended Solids (TSS) and to treat 1.0-inch of volume from the impervious area for water quality.*
- a. The Applicant has stated that the stormwater management system is designed to remove a minimum of 80% of the Total Suspended Solids (TSS) from all proposed impervious surfaces as well as 44% pretreatment prior to infiltration BMPs. In order to meet the 80% TSS removal rate, the Applicant has proposed deep sump catch basins and water quality units or an infiltration system, or bioretention basins. The Applicant appears to have met the 80% TSS removal criteria.
  - b. The Applicant has indicated on the design plans that forebays are proposed at the inlet to the bioretention basins. HW recommends that forebay sizing calculations be provided for review in accordance with Volume 2, Chapter 1, page 15 of the MSH.
  - c. The HydroCAD calculations provided for Bio-retention Basin, P-B, include a 15 inch culvert with an invert at 150.50 as a primary outlet. On the plan this outlet appears to be a 12 inch culvert with an invert at 150.00. HW recommends that the Applicant revise the plans or the calculations for consistency. It also appears that during larger storm events Basin P-B may overtop the 154.5 berm proposed. HW further recommends an emergency overflow be proposed to protect the bank from potential erosion.

5. *Standard 5 is related to projects with a Land Use of Higher Potential Pollutant Loads (LUHPPL).*

The project is not considered a LUHPPL, therefore no further comment is needed.

6. *Standard 6 is related to projects with stormwater discharging into a critical area, a Zone II or an Interim Wellhead Protection Area of a public water supply.*

The project site is located within a Zone II Interim Wellhead Protection Area. The site has been designed to treat the one inch Water Quality Volume and has proposed stormwater practices such as deep sump catch basins, water quality units, bioretention basins, and subsurface infiltration, which are all appropriate BMPs for a Zone II Interim Wellhead Protection Area per the MSH. Additionally, the Applicant has identified proposed source controls and pollution prevention measures in the submission. The Applicant appears to be in compliance with Standard 6.

7. *Standard 7 is related to projects considered Redevelopment.*

The proposed project is considered a redevelopment and the Applicant has stated that the Project will be designed to be substantially compliant with the MSH for new development. It appears that the design will improve the quantity and quality of stormwater discharging from the site by reducing impervious surfaces, proposing stormwater pretreatment, providing recharge, and providing a long term Operation and Maintenance Plan. The Applicant appears to be in compliance with Standard 7.

8. *Standard 8 requires a plan to control construction related impacts including erosion, sedimentation or other pollutant sources.*

- a. The Applicant has noted that a Stormwater Pollution Prevention Plan (SWPPP) will be developed and submitted to the Town prior to land disturbance in accordance with the EPA National Pollutant Discharge Elimination System (NPDES) Construction General Permit. In the event that various phases are constructed simultaneously the Applicant should verify that the proposed erosion control methods function in harmony. For instance it may be reasonable to utilize the same construction entrance for various phases and verify that the location of the erosion control barriers (e.g. straw bale or silt sock) for one phase are not in conflict with the vehicle access to a separate phase.
- b. The plans reviewed by HW did not include extensive erosion controls or details. HW recommends that the Applicant provide full erosion control plans with typical construction practices including the location of stock piles and construction access for review and approval by the Town of Sudbury.

9. *Standard 9 requires a Long Term Operation and Maintenance (O & M) Plan to be provided.*

The Applicant has included a Long Term Operation and Maintenance (O&M) Plan in the submission that includes checklists for maintenance. It appears that Sudbury Avalon, Inc. will be responsible for all maintenance and inspections of the stormwater system for the Avalon Sudbury development. HW recommends that the Applicant confirm who the responsible party will be.

The Maintenance of Stormwater Management Systems narrative includes a statement on checking dumpster areas. It does not appear that dumpsters have been located on the plan set. HW recommends that the Applicant clarify how solid waste will be typically managed at Avalon Sudbury.

10. *Standard 10 requires an Illicit Discharge Compliance Statement be provided.*

The Applicant has stated that the stormwater components included in the design plans submitted for this portion of the Master redevelopment project are in full compliance with current standards. HW recommends that as stated in Volume 1, Chapter 1, page 25 of the Massachusetts Stormwater Handbook, a Certificate of Compliance should not be issued by the Sudbury Conservation Commission until it has been determined that the Illicit Discharge Compliance Statement has been submitted for the Avalon Sudbury development and that it has been verified that there are no illicit discharges occurring on this portion of the 50 acre site.

11. *Plan Details*

- a. HW recommends that a detail for the bioretention basins be provided including the inlets, forebays, berms, materials, and planting plan.
- b. The inlets to Basin P-B should be clarified. There appear to be two however only one has been labeled.
- c. HW recommends that additional spot grades be added within the parking area to verify that runoff will flow towards the catch basins and not pond in corners.
- d. There are a number of locations around the perimeter of the proposed development where the proposed contours do not tie back in to the existing contours. It appears that the grading can be designed appropriately however the Applicant should verify the proposed contours are added so that the proposed stormwater will be runoff as designed. There are a number of contours missing near the Beltran Building as well as in the vicinity of the wastewater treatment plan, both of which are labeled to remain.
- e. HW has only reviewed the Grading, Drainage, and Erosion Control Plan for this

development. HW recommends that the erosion controls be provided on a separate plan such as a Site Preparation or Erosion Control Plan for clarity. HW further recommends that a plan be provided that clearly illustrates which existing drain pipes shall be removed and which will be maintained. The construction details should also be provided for review as well as the landscaping plan, specifically for the bioretention basins.

## 12. Drainage Calculations

The Applicant has provided storm drain calculations for the 25-year design storm. HW offers the following comments:

- a. It appears that the 18-inch pipe at CB-308 only has only one foot of cover. HW recommends that the Applicant verify that the pipe can physically be installed in this catch basin.
- b. It is not clear what material is proposed for the drain pipes. HW recommends that the material be listed on the plan set or on a detail sheet.

## Conclusions

HW recommends that the Sudbury Zoning Board of Appeals require that the Applicant address these comments as part of the permitting process. The Applicant is advised that provision of these comments does not relieve him/her of the responsibility to comply with all Town of Sudbury Codes and Bylaws, Commonwealth of Massachusetts laws, and federal regulations as applicable to this project. Please contact Janet Carter Bernardo at [jbernardo@horsleywitten.com](mailto:jbernardo@horsleywitten.com) or at 857-263-8193 if you have any questions regarding these comments.

Sincerely,

HORSLEY WITTEN GROUP, INC.



Janet Carter Bernardo, P.E.  
Senior Project Manager