

# Horsley Witten Group

*Sustainable Environmental Solutions*

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June 27, 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 second review of the Avalon Sudbury multi-family housing development (Site). The plans and calculations were prepared for Sudbury Avalon, Inc. (Applicant) by VHB.

The following supplemental and revised materials for the above-referenced project have been submitted to address comments presented by HW in the Stormwater Management Review letter dated June 6, 2016.

- Response letter to the Sudbury ZBA, dated June 20, 2016;
- Revised HydroCAD bioretention & subsurface sizing analysis, dated June 16, 2016;
- Forebay Sizing Calculations, dated May 18, 2016; and
- Site Plans: Avalon Sudbury, latest issue date June 20, 2016, including:
  - Title Sheet
  - Legend and General Notes C-1
  - Overall Site Plan C-2
  - Layout and Materials Plan C-3.1 & C-3.2
  - Grading, Drainage, and Erosion Control Plan C-4.1 & C-4.2
  - Utility Plan C-5.1 & C-5.2
  - Site Details C-6.1, C-6.2, C-6.3, & C-6.4
  - Planting Plan L-1 & L-2
  - Planting Details L-3
  - Existing Conditions Plan of Land Sv-1, Sv-2, Sv-3, Sv-4, Sv-5, & Sv-6

### **Stormwater Review**

Our follow up comments are provided below in **bold** font:

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.

**The Applicant has added notations to the existing drainage pipes proposed to be retained on Site Plans C-4.1 & C-4.2. It appears that there are two existing outfalls impacted by the development that discharge into a wetland resource area. The discharge will be treated and as proposed will not cause erosion into the wetland. The Applicant appears to be in compliance with Standard 1.**

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.

**No further comment necessary.**

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.

**No further comment necessary.**

- 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.

**The Applicant has provided a notation on Drawings C-4.1 & C-4.2 requiring the contractor to conduct additional soil testing prior to construction. Requiring the test pits to be conducted prior to construction would be an acceptable condition for this circumstance. HW recommends that the ZBA consider including a condition that states: “Deep test pits shall be conducted prior to any land disturbance. The Applicant shall provide documentation verifying that the subsurface infiltration system has been sized and located properly.”**

- 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.

**The Applicant has revised the HydroCAD calculations and has provided typical details for an Outlet Control Structure and a Drain Manhole. The Applicant’s response is adequate. However, HW recommends that specific details, including a plan view of the pipe connections and location of the weirs be provided in the construction documents for the contractor’s information.**

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.

**No further comment necessary.**

- 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.

**The Applicant has provided the forebay sizing calculations as requested. However the area provided for Bio-retention Basin 1 at Elevation 154 does not appear to be accurate. HW recommends that the Applicant revisit this area and revise the calculation and the forebay as necessary.**

- 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.

**The Applicant has adequately responded to our comment.**

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.

**No further comment necessary.**

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.

**No further comment necessary.**

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.

**No further comment necessary.**

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.

**No further comment necessary.**

- 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.

**The Applicant has provided erosion control notes, details, and the location of the erosion control barrier on the Site Plans. HW recommends that the minimum size of the straw wattle as shown on Drawing C-6.4 be revised to be 18 inches.**

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.

**The Applicant has adequately responded to our comment.**

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.

**No further comment necessary.**

11. *Plan Details*

- a. HW recommends that a detail for the bioretention basins be provided including the inlets, forebays, berms, materials, and planting plan.

**The Applicant has adequately responded to our comment, a detail has been added to Drawing C-6.2.**

- b. The inlets to Basin P-B should be clarified. There appear to be two however only one has been labeled.

**The Applicant has adequately responded to our comment, both inlets to Basin 2 have 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.

**The Applicant has stated that additional spot grades will be added to the Construction documents.**

- 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 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.

**The Applicant has adequately responded to our comment, additional proposed contours have been added to the grading plans.**

- 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.

**The Applicant has adequately responded to our comment. Additional information and drawings have been provided, including a list of plants to be established in the bioretention basins on Drawings L-1 and L-2.**

## 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.

**The Applicant has adequately responded to our comment.**

- 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.

**The Applicant has adequately responded to our comment. A list of pipe material has been included on Drawing C-1.**

**Conclusions**

HW is satisfied that the Applicant has adequately responded to the majority of our concerns. HW recommends that comments 4.b. and 8.b be addressed by the Applicant prior to the ZBA issuing a Decision. 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