

October 5, 2012

Lou Taverna, P.E.
City Engineer
1000 Commonwealth Avenue
Newton Centre, MA 02459

Re: Drainage System Peer Review – Riverside Development Project

Mr. Taverna:

Weston & Sampson is pleased to provide this letter report related to our peer review of the proposed drainage system for the Riverside Development Project.

We reviewed the following major documents provided by the City of Newton:

- Stormwater Management Report, Dated: August 27, 2012, by: Vanasse Hangen Brustlin
- Site Plans: The Station at Riverside Dated: August 27, 2012, by: Vanasse Hangen Brustlin

The elements of our review within the documents included:

- A general review of the drainage system for the development.
- Review the Grading Plan, the Utility Plan, and drainage related detail sheets.
- Check sizing of drain pipes and infiltration systems.
- Review compliance with Massachusetts Stormwater Standards.
- Review compliance with City of Newton Stormwater Standards.
- Review compliance with Charles River Watershed TMDLs for Pathogens and Nutrients.
- Review the HydroCAD and StormCAD models that were used for Massachusetts Stormwater Compliance.

A Stormwater Management Report documents compliance with the Massachusetts Stormwater Management Standards and is a required submittal with the Notice of Intent. Our review of the Stormwater Management Report was performed to determine compliance with the items listed above. Additional reviews for other components will be performed by City of Newton Conservation Commission and MADEP reviewers.

The Riverside Development Project is governed by the following stormwater regulations that protect communities from development changes that adversely affect stormwater quality and quantity:

- Massachusetts Stormwater Management Standards
- Total Daily Maximum Loads, Environmental Protection Agency

- City of Newton Stormwater Standards

Our review includes an evaluation of compliance with each of these elements.

EXECUTIVE SUMMARY

The impact land development has on a drainage basin is a critical concern for tributary communities. Concerns center on stormwater quality and quantity. Stormwater quality and quantity are both directly impacted by the percentage of pervious and impervious land cover within a watershed.

Pervious land cover, such as grass, soil, and woods, decrease the amount of stormwater runoff, while impervious land cover, such as pavement and buildings, increase the amount of stormwater runoff from a storm event.

The Riverside Development Project, as presented for our review, will not adversely affect the Charles River Watershed due to a net reduction of ½ acre of impervious area. The ½ acre reduction will reduce the volume and rate of flow to the Charles River Watershed and improve stormwater quality through a variety of treatment systems.

Best Management Practices (BMPs) and Low Impact Development (LIDs) are Land Planning and Engineering Design approaches to managing stormwater runoff. These practices emphasize conservation, onsite natural features, and engineered hydrologic controls to protect stormwater quality while reducing runoff flow rates.

The existing Riverside MBTA site incorporates one (1) BMP, an oil/water separator. The Riverside Development Project incorporates a combination of ten (10) BMP's and LID's with five (5) infiltration systems and five (5) bio-retention systems. The increase of nine (9) BMP's on the site, in conjunction with the reduction of impervious area, will reduce stormwater quality and quantity impacts on the community and the Charles River Watershed.

Massachusetts Stormwater Management Standards Review

The Massachusetts Stormwater Standards 1 thru 10 are applicable to the project. We have determined that the proposed Stormwater system is in compliance with the standards to the extent described below.

Standard 1 - No New Untreated Discharges – No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

Upon review of the Stormwater Management Report and Site Plan the project appears to be in compliance with Standard 1. The project is utilizing an existing outfall and has provided Best Management Practices (BMP's) for treatment. Minimal treatment exists on the current site.

Standard 2 - Peak Rate Attenuation – Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.

Upon review of the Stormwater Management Report, Site Plan and hydrologic modeling computations the project appears to be in compliance with Standard 2. Table 3 - Peak Discharge Rates, indicates peak discharge rates for existing and proposed conditions that show a net discharge rate reduction for the 2-year, 10-year, and 100-year 24-hour storm event as required.

The reduction is attributed to the decrease in impervious area and flow attenuation through the proposed BMP's.

The project site is stated as being outside the 100-year BLSF and has been confirmed against FIRM.

Standard 3 - Recharge To Groundwater – Loss of annual recharge to ground water shall be eliminated or minimized through the use of infiltration measures.

Upon review of the Stormwater Management Report, Site Plan, hydrologic modeling computations, BMP sizing data, recharge volume requirements, and recharge capture area adjustment the project appears to be in compliance with Standard 3. Table 4 - Summary of Recharge Calculations show these results.

The Riverside Development Project incorporates a combination of ten (10) BMP's and LID's with five (5) infiltration systems and five (5) bio-retention systems to increase annual groundwater recharge.

Standard 4 - Water Quality – Stormwater management systems must be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS).

Upon review of the Stormwater Management Report, Site Plan, hydrologic modeling computations, BMP sizing data, and TSS calculation worksheet the project appears to be in compliance with Standard 4.

The Riverside Development Project incorporates a combination of ten (10) BMP's and LID's with five (5) infiltration systems and five (5) bio-retention systems and removes at least 80% of TSS. This is confirmed in the MADEP TSS worksheet calculations.

Standard 5 –Land Uses With Higher Potential Pollutant (LUHPPL)

Upon review of the Stormwater Management Report, Site Plan, and hydrologic modeling computations it appears that the project is not a LUHPPL and does not generate higher concern.

We confirmed that the land use designations for the Riverside Development Project site are not on the MADEP LUHPPL list.

The one category where the site could have qualified as a LUHPPL is the number of parking spaces. This concern was addressed by reducing the number of uncovered parking space surfaces below the MADEP threshold.

Standard 6 –Area of Critical Environmental Concern (ACEC)

Upon review of the Stormwater Management Report and Site Plan, the project does not appear to be in a ACEC.

We reviewed the MAGIS database and confirmed that there are not any ACEC within the discharge area for the Riverside Development Project.

Standard 7 –Project Classification – New Development or Redevelopment

Upon review of the Stormwater Management Report, and Site Plan, the project appears to be in compliance as a redevelopment project.

Standard 8 – Construction Period Pollution Prevention – Erosion and Sedimentation Controls

Upon review of the Stormwater Management Report, the project appears to be in compliance. An erosion and sediment control program has been developed in accordance with MADEP requirements.

The Construction Pollution Prevention Plan implements:

- Erosion Control Barriers – For Wetland Protection
- Stabilized Construction Exits – For Offsite Sediment Protection
- Pavement Sweeping – For Sediment Removal
- Temporary Sedimentation Basins and Diversion Basins - As necessary for fine-grained sediment protection
- Catch Basin Inlet Protection – For Sediment Inflow Protection
- Temporary Mulching and Seeding –For Soil stabilization
- Dewater Protocol – For Sediment Removal

Standard 9 – Operation and Maintenance Plan

Upon review of the Stormwater Management Report, the project appears to be in compliance. An Operation and Maintenance Plan has been developed in accordance with MADEP requirements..

The Long-Term Operation and Maintenance Plan implements:

- Maintenance of Pavement Systems
- Maintenance of Vegetative areas
- Management of Snow and Ice
- Spill Prevention Response Plan
- Stormwater Maintenance Measures For Catch Basins, Infiltration Systems, Water Control Devices, Outfalls, Roof Drain Leaders, and Bioretention Basins

Standard 10 – Prohibition of Illicit Discharges

Upon review of the Stormwater Management Report and Site Plan, the project appears to be in compliance. The documents indicate that all sanitary and stormwater structures remaining from the existing development will be removed.

City of Newton Standards Review

In addition to the “no net increase in post construction peak discharge rates” required in MADEP Standard 2, the City of Newton also requires “no net increase in post construction flow volume”.

Upon review of the Stormwater Management Report, Site Plan and hydrologic modeling computations, the project appears to be in compliance with the City of Newton Volume requirements. Table 5 - Stormwater Volume Analysis, indicates peak discharge volumes for existing and proposed conditions that show a net discharge volume reduction for the 2-year, 10-year, and 100-year 24-hour storm event as required.

The reduction is attributed to the decrease in impervious area and flow attenuation through the proposed BMP's.

Total daily Maximum Load (TDML), EPA, Charles River Watershed Association Review

The project proposes the use of BMP's and LID's capable of achieving the required 65% phosphorous removal. Actual phosphorous removal will be determined during the final drainage design process.

Conclusion

The proposed Riverside Development Project appears to be in compliance with evaluation criteria, including Massachusetts Stormwater Standards, City of Newton Stormwater Standards, and TMDLs for the Charles River Watershed. In general the project will improve water quality and reduce peak runoff rates and volume through a reduction in impervious area and the implementation of BMPs and LIDs.

There are several utility crossings along the route of proposed drainage structures. Elevation data for the proposed structures was not included with the project documentation. Each crossing should be evaluated to ensure there are not any vertical conflicts.

The Intermodal Commuter Facility is shown over the existing 60-inch drainage culvert. Access to this pipe for future repair and maintenance should be provided.

All existing drainage infrastructure should be cleaned and inspected to ensure that it meets the theoretical carrying capacities that were assumed in the calculations.

Weston & Sampson reviewed our specific technical findings with the developer on October 4, 2012. There are several outstanding items that need to be confirmed and provided. Most of these items are missing support documentation and apparent typographical errors. Other items will

require minor additional calculations that are not expected to impact the findings of our report. Please note that the report conclusions are based on receiving this documentation and verifying its compliance with our meeting discussions. A list of the outstanding issues are included in Appendix A of this report.

Weston & Sampson appreciates the opportunity to present our findings. If you have any questions or require additional information please call me. I may be reached at (978) 532-1900 x2280.

Very truly yours,

WESTON & SAMPSON ENGINEERS, INC.

10/5/2012

X 

David M. Elmer, PE
Senior Associate
Signed by: David Elmer

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APPENDIX A – OUTSTANDING ISSUES

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OUTSTANDING ISSUE STANDARD 2 Peak Rate Attenuation:

- A. The proposed flow rates in Table 3 do not correspond to the computational hydrologic data in Appendix G, please clarify.
- B. A confirmation of subarea area and composite curve number (CN) break down was not completed due to insufficient information and impacts the results.
- C. Pending final confirmation of HSG A as the assumed soil group for the site. Permeability test need to be performed to finalize infiltration basin sizing.
- D. Time of Concentration backup needs to be provided.

OUTSTANDING ISSUE STANDARD 3 Recharge To Groundwater:

- A. Page 19 states a Required Recharge Volume of 22,050 cubic feet and 21,038 cubic feet of recharge provided. The Required recharge Volume of 22,050 does not correspond to the computational data of 18,654 or 18,667 stated in table 4. Recharge Provided page 11-22,647 page 19-21,038 recharge calculations 18,654. Correct inconsistencies.
- B. A confirmation of subarea area and composite break down (impervious in particular) was not completed due to insufficient information and impacts the results.
- C. Pending final confirmation of HSG A as the assumed soil group for the site as it determines the Required Recharge Volume and Provide Recharge Volume.
- D. Is the separation from high seasonal groundwater and the bottom of exfiltration beds greater than 4 FT.? Not confirmed.

OUTSTANDING ISSUE STANDARD 4 Water Quality:

- A. TSS removal rates concur with MassDEP Stormwater handbook, clarification of the selected BMP option should be provided in the write-up to correspond with TSS removal calculation worksheet.
- B. A confirmation of subarea area and composite break down (impervious in particular) was not completed due to insufficient information and impacts the results.

OUTSTANDING ISSUE City of Newton Stormwater Standards:

- A. Table 5 Existing 10-year volume should be 0.75 not .075?
- B. Table 5 units (AF) not (CF)?
- C. The proposed volumes in Table 5 do not correspond to the computational hydrologic data in Appendix G, please clarify.

OUTSTANDING ISSUE General:

- A. Document TMDL - 65% reduction in phosphorus to be provided.
- B. Check the catch basin inlet capacity. Some CB Inlets may need double structures.

OUTSTANDING ISSUE STORMCAD:

- A. What Design Storm for sizing?
- B. Why flows introduced at manholes?
- C. Why intensity on nodes w/o C values?
- D. Why CA values on nodes w/o C or A
- E. Should A values be at CB's not MH?
- F. Where is flow from infiltration or bio retention system overflows?
- G. Where are subareas introduced to the system?
- H. Check that Areas tributary to CB's + Areas tributary to Infiltration/Bio retention systems = Site Area
- I. Why flows of 3.2 cfs in CO-10 - CB-K7 inflow upstream is 0.30 cfs
- J. Why total flows in the range of 1.0-46 cfs? Total of 16cfs introduced? Check influent to site.