



August 31, 2020

Town of Sudbury  
Conservation Commission  
275 Old Lancaster road  
Sudbury, MA 01776

Attn.: Lori Capone, Conservation Administrator

Re: Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project  
Conservation Commission Stormwater Peer Review Update

Dear Ms. Capone:

BETA Group, Inc. has reviewed the supplemental/revised stormwater documents submitted stormwater, submitted for the project known as Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project. This letter is provided to update BETA's stormwater management findings, comments and recommendations. Note that review comments pertain only to the portion of the project within the Town of Sudbury.

## BASIS OF REVIEW

The following documents were received by BETA and will form the basis of the review:

- Response to comments letter to the Sudbury Conservation Commission dated July 30, 2020 from VHB
- Site Plan (181 sheets) entitled *Sudbury-Hudson Transmission Reliability Project – Sudbury Notice of Intent Plans* dated July 2020 by VHB, Watertown, MA.
- Site Plan (41 sheets) entitled *Commonwealth of Massachusetts Department of Conservation and Recreation Division of Planning and Engineering Mass Central Rail Trail in the Towns of Hudson, Stow, Marlborough & Sudbury Massachusetts Middlesex County* dated July 2020 by VHB, Watertown, MA.
- Sudbury Stormwater Management Plan Narrative – Sudbury-Hudson Transmission Reliability Project and Mass Central Rail Trail Project, dated July 2020 by VHB including the following documents:
  - Checklist for Stormwater Report
  - Operation and Maintenance Plan (O&M) and Long Term Pollution Prevention Plan (LTPPP)

## COMPILED REVIEW LETTER KEY

BETA reviewed previous submissions and provided comments in letters to the Commission dated May 11, 2020 (original comments and responses in *italics*). VHB (VHB) provided responses to these comments (responses in standard text). This letter provides an update to comments by BETA (status in *bold italics*).

## INTRODUCTION

The project Site is a portion of the regional Mass Central Rail Trail (MCRT). Approximately 4.3 miles in length, the 82' wide right-of-way runs through a variety of neighborhoods as it crosses Sudbury. The portion the trail relevant to this submittal begins at the intersection of the Marlborough, Hudson, and Sudbury town lines. The trail continues southeast, crossing Dutton Road, Peakham Road, Horse Pond Road, Union Ave and Boston Post Road before turning eastwards and crossing under Landham Road before reaching a privately owned driveway. While the trail continues east towards the Town of Wayland, this submittal proposes alterations

only to the portion of the trail between the aforementioned town line intersection and the private driveway associated with #163 and #183 Boston Post Road (the "Site"). The included lots are identified as Lots H03-5000, J05-5000, J06-5000, K07-5000, K08-5100, K08-5000, K09-5000. Alterations are also proposed to parcel K11-0402, #163 Boston Post Road, which is an electric substation owned by Eversource.

The existing site is an abandoned rail line. An unmaintained single-track railroad in poor condition spans the length of the Site. Vegetation within the rail right-of-way is generally light, and foot traffic has created a walking path along most of its length. Small amounts of solid waste and structures associated with the former railtrack (signs, whistle posts, etc.) are present throughout its length. The rail line includes two bridges to cross Hop Brook, one in the northwest portion and one in the southeast. Several culverts in various conditions cross beneath the rail trail. These culverts generally convey flows from the numerous wetland areas, intermittent and perennial streams, and other water bodies present on both sides of the Site.

Topography at the Site is varied, but prominently follows two patterns. Pattern 1 includes areas where the rail track is "built-up" to be several feet above the surrounding areas, causing runoff to flow off the track in either direction. Pattern 2 includes areas where the track is at a much lower elevation compared to surrounding areas, causing runoff to flow into the trail footprint and travel along its length. In most areas, runoff is conveyed to nearby streams, wetlands or other low-lying areas.

The project proposes to remove the existing railroad line and clear an 18 to 70 foot wide area for a construction platform, and install a 115KV underground transmission line extends below the proposed trail the length of the Site. The transmission line will connect to the #163 Boston Post Road substation and link to another proposed transmission line in the Town of Hudson. Above the transmission line, the applicant proposes a 14' wide gravel base and 10-foot wide paved publicly accessible multi-use trail. Associated improvements include rehabilitation of Bridge 128, replacement of Bridge 127 landscaping, areas of fencing, and utility equipment. Stormwater management is proposed through the creation of swales and infiltration areas as well as restoration or replacement of existing culverts.

The project will require significant disturbance of resource areas and/or their associated buffer zones, including wetlands, riverfront area, land under water, banks, vernal pools, and bordering land subject to flooding. Mitigation is generally proposed through restoration of temporarily impacted areas and wetland replication.

## REVISIONS SUMMARY

Since the initial project review no substantial revisions have been made to the design. The following minor revisions have been incorporated:

- A seed mix that includes four species of native woody shrubs has been added to the planting schedule on Sheet 131. This seed mix will be spread along the graded embankments for stabilization.
- The MCRT plans have been revised to include only true native species in the plant list.
- The dewatering detail was revised to call for straw bales (rather than hay bales).
- The reference to the use of fertilizers in the erosion control blanket detail on the plan set was removed.
- Additional contour labels were added to the transmission line plans.

In addition, further calculations relating to stormwater have been provided/revised, as outlined in the comments throughout this report.

## GENERAL

G1. *The submitted plans and calculations do not easily provide for confirmation of compliance.*

- a. *Provide additional contour labels to construction plans to better understand topography.*  
VHB: Additional contour labels have been added to the construction plans and are included in the plans that are an attachment to this supplemental submission.  
BETA2: Labels provided – issue resolved.
- b. *Identify existing/proposed cover types on watershed plans.* VHB: The stormwater report figures will be updated to include existing/proposed cover types. BETA2: Information provided – issue resolved.
- c. *Provide station markers on Drain Area plans to clarify limit of watersheds compared to proposed improvements.* VHB: The stormwater report figures will be updated to include station markers for clarity. BETA2: Information provided – issue resolved.
- d. *Include Tc paths on watershed plans.* VHB: The stormwater report figures will be updated to include Tc paths. BETA2: Information provided – issue resolved.
- e. *Use consistent units (i.e. square foot measurements are included in the existing condition model while acres are used in the proposed condition).* VHB: The existing and proposed condition models will be updated to use acres. BETA2: Models revised – issue resolved.
- f. *Use consistent nomenclature for BMPs; plans indicate “swales” and “area of increased infiltration” where stormwater reports refer to water quality swales and infiltration basins.* VHB: The stormwater report will be updated to provide nomenclature that is consistent with the plans (i.e., swales and area of increased infiltration). Areas of increased infiltration characteristics most closely match an infiltration basin Best Management Practice (BMP) because they detain, treat, and infiltrate stormwater. BETA2: The “area of increased infiltration” more closely resembles a grass channel with check dams. The check dams slow water velocity but do not hold water. Infiltration cannot be guaranteed therefore no infiltration credit.
- g. *Show and label all BMP swales and area of increased infiltration on cross sections.* VHB: The BMP swales and areas of increased infiltration will be labelled on the cross sections. BETA2: Information provided – issue resolved.

## WETLANDS AND RESOURCE AREA IMPACT REVIEW

Supplemental/documentation related to wetland resource area impacts was reviewed and an update letter provided to the Commission on August 11, 2020.

Several comments were left unaddressed in the aforementioned review letter as revised Stormwater documentation was not available at the time of the review. These comments have been copied below:

4. *The Project must fully comply with the MA Stormwater Regulations and Standards regardless of the application of the Bikepath Redevelopment provision.* VHB: As stipulated in the Wetlands Protection Act regulations, 310 CMR 10.05(6)(m)6, the Stormwater Management Standards apply to the maximum extent practicable for bike paths. The reviewer’s statement that the Project must fully comply with the MA Stormwater Regulations is inconsistent with the regulations.

As required by 310 CMR 10.05(6)(o), all reasonable efforts were made to meet Standards 2, 3, 4, 5, and 6., a complete evaluation was made of possible stormwater management measures including environmentally sensitive site design and low impact development techniques that minimize land disturbance and impervious surfaces, structural stormwater best management practices, pollution prevention, erosion and sedimentation control and proper operation and maintenance of stormwater best management practices; and the highest practicable level of stormwater management is being implemented.

The stormwater management system was designed for the final condition of the Project, which is a 10-foot-wide paved bike path and incorporates areas of increased infiltration and swales to promote recharge. Stormwater from the bike path discharging to critical areas is conveyed to areas of increased infiltration to the extent possible. The areas of increased infiltration characteristics most closely match an infiltration basin BMP because they detain, treat, and infiltrate stormwater. Areas of increased infiltration within WPA jurisdiction were incorporated into the stormwater design from stations 405+00 to 407+50, 515+00 to 516+10, 576+20 to 576+65, 579+25 to 579+90, 585+40 to 588+30, 730+00 to 732+00, and 735+00 to 738+30. In addition to areas of increased infiltration, swales were placed within WPA jurisdiction from stations 395+80 to 397+00, 515+00 to 516+00, and 576+20 to 576+75. In practice, these swales will provide stormwater detention, infiltration, and treatment.

In other areas, stormwater from the bike path will discharge to the abutting vegetation and forested area where stormwater will naturally infiltrate under the majority of storm events. In stormwater management planning, this approach is referred to as an "impervious area disconnection," which is the redirection of stormwater from impervious cover (i.e., paved bike path) to an area of pervious cover (i.e., vegetated and forested area) to provide filtering and infiltration.

The stormwater management design selected for the Project allowed the Project to provide stormwater treatment and recharge throughout the Project area while reducing disturbance to existing vegetation, limiting impacts to buffer zones and resource areas, providing a manageable system for the long-term operator to maintain, and targeting additional treatment at critical areas. The stormwater management design also considered the key fact that stormwater runoff from bike paths is a very limited source of pollutants such as total suspended solids and phosphorus. The proposed measures also exceed what is typically incorporated into rail trail projects.

*BETA2: During the Conservation Commission meeting there was discussion about requiring full compliance with the Massachusetts Stormwater Standards for these combined projects. To determine what that may look like, BETA took a closer look at the design. For long linear projects the Standards "allows MassHighway to recharge additional runoff at certain locations along a portion of the highway within a subwatershed to compensate for sections of the roadway in the same subwatershed where it may be difficult to recharge the entire required recharge volume". BETA also notes that the project predominately utilizes country drainage. The Standards allow for credit for "disconnection of non-rooftop runoff".*

*BETA reviewed each watershed that did not currently include BMPs for recharge and treatment of runoff and developed the attached Watershed Worksheets. Based on where the watershed is located and where runoff would be directed, BETA developed a priority list for recommended inclusion of additional BMPs. Areas where the work is located within a stormwater critical area (Zone 2, vernal pool and cold-water fishery) were classified as high priority. Medium priority was assigned to work areas that would drain to non-critical wetland resource areas. Low priority was assigned to areas that did not include new impervious area and/or where country drainage "credit" is sufficient.*

*The general restriction of BMPs within buffer zones of vernal pools is predominately so that organisms will not relocate from the vernal pool to the BMP. An infiltration trench is a simple BMP that could be installed that will not attract vernal pool organisms while providing recharge and treatment of runoff in this critical area.*

W21. *Provide the construction mat dimensions and stacked height required to provide the required construction platform. VHB:* As described in Note 2 on Sheets 47 and 65, the contractor will be limited to maximum construction mat dimensions of 40 feet by 40 feet at any given time, and as noted in the conceptual crane mat sections on Sheet 125, the actual configuration of the crane mats will be determined by the contractor. Based on the maximum crane mat width of 20 feet from the centerline of construction to the outermost limit on each side, the stacked height at Bridge 128 may be up to 7 feet and the stacked height at Bridge 128 may be up to 4 feet. BETA2: See section on Bridge Construction Impacts.

## STORMWATER MANAGEMENT

The project proposes stormwater management primarily through country drainage with some areas of the property improved with water quality swales and low points intended to function as infiltration basins. A catch basin is proposed near station 531 to convey flows to a 2' deep surface basin near station 534. Existing culverts used to convey flows between wetland areas and/or streams will generally be retained. Otherwise, stormwater from the proposed trail will flow, unmanaged, onto the surrounding areas to the north and south.

Reference is made to the Town of Sudbury Stormwater Regulations where appropriate.

SW1. *Clarify justification for abandonment of existing culvert pipes such that local drainage patterns will not be impaired. VHB:* On the previous version of the plans, pipe #126D was identified to be abandoned. After further review, Pipe #126D will be replaced to maintain local drainage patterns and the plans were updated to reflect this change. In the profile of the previous version of the plans, Pipe #125B was mistakenly labeled to be abandoned, this label was removed and, as noted on the construction plans, the pipe will be retained and extended. *BETA2: A Culvert Structure Assessment Memorandum dated May 31, 2017 to Marc A. Bergeron from VHB was included in the submission. At a minimum the assessment should be updated and the recommendations included in the design plans. Any structures that could not be located should be uncovered, evaluated, and restored.*

SW2. *Field visit noted the presence of an outfall near the Landham Road bridge which will discharge into Watershed 10.14. Determine approximate runoff anticipated from this outfall and include in HydroCAD model. VHB:* Based on MassDOT plans for intersection upgrades to Route 20 and Landham Road there is an existing 12" outfall running from Land ham Road to the northeast of the Landham Road bridge over the MBTA right-of-way ("ROW"). Watershed areas for existing and proposed conditions were updated to include the tributary area of this outfall. *BETA2: Plans revised – issue resolved.*

### MASSACHUSETTS STORMWATER MANAGEMENT STANDARDS:

The Applicant indicates the project qualifies as a Limited Project 310 CMR 10.53(3) and Bike Path 310 CMR 10.05(6)(m) and therefore only needs to meet Stormwater Standards to the maximum extent practicable.

BETA notes that the combined projects exceed impacts associated with a typical pedestrian path for the following:

- There is regrading through the length of the project and paved and therefore does not meet the requirements for a limited project 310 CMR 10.53(3)(d)(3).

- In adding the transmission line to the bike path an area greater than that which is required solely for the path needs to be cleared and maintained. A typical 10-foot bike path would only need a total clear zone of 14 feet well below the 18, 22 or 40 feet wide (plus additional grading) provided.
- The narrative indicates that the path is also to serve as an access drive (motorized) to maintain the transmission line.
- Significant portions of this work are within protected resource areas. Including buffer zones to vernal pools and Hop Brook which is impaired for total phosphorus.

*SW3. See WPA1. BETA recommends the commission determine if this combined project qualifies as a Limited Project 310 CMR 10.53(3)(d). VHB: See the responses to BETA comments C2, C3, and WPA1. BETA2: This comment has been responded to in the review letter relating to the performance standards, dated August 11, 2020. To summarize, the applicability of Limited Project provisions for a given project may only be determined by the issuing authority. To avoid repeated comments on this matter, further discussion will be under the performance standards review.*

LID Measures: The Checklist for Stormwater Report lists minimizing disturbance to existing trees and shrubs, use of "country drainage" and water quality swales. Plans include swales with stone check dams in several locations, and "areas of increased infiltration".

*SW4. Water quality swales require specific design requirements. Provide details and supporting calculations in accordance with the MassDEP Stormwater Handbook. VHB: The features called out as "Water Quality Swales" in the previously submitted Stormwater Management Plan were revised to match the plans, which label these areas as "Swales" In practice, these swales are BMPs that will provide stormwater detention, infiltration, and treatment. However, in the revised Stormwater Management Report and calculations these swales are not included to document compliance with Stormwater Standards 2, 3, 4 or 6 because they are not considered recharge and treatment BMPs by MassDEP's current Stormwater Management Handbook. BETA2: Clarifications noted. See SW10.*

*SW5. Some swales are located above "fluidized thermal backfill". Provide information on infiltrative capacity of this material. VHB: Fluidized thermal backfill is a permeable material with an estimated permeability of 1.4 inches per hour. BETA2: Information provided. Revise exfiltration rate for Basins P-8.3B, 10.8A, and 10.13A to be that of the thermal backfill.*

*SW6. Most swales and enhanced infiltration areas are not level and check dams are 6 inches high, update HydroCAD model and treatment volume calculations to reflect design. VHB: The proposed conditions' hydrologic model assumes stormwater detention only in the areas of increased infiltration (not in conveyance swales) for calculation of the proposed conditions' peak rate of runoff and volume. Storage areas and water quality volumes were refined in the updated Stormwater Management Plan. BETA2: Model revised for 6 inch high check dam but not for sloped bottoms.*

*SW7. In several locations the proposed swales are on the north side of the path where the path cross slope pitches down to the south sites. Recommend relocating swales to side the future path will shed runoff. VHB: The majority of swales and areas of increased infiltration receive bike path runoff, in a few locations, the swales are intended to address off-site stormwater that drains toward the path. The plans were updated to revise the cross slope at stations 736+50 to 738+25 to provide treatment and detention of the bike path runoff. BETA2: Design intent clarified – issue resolved.*

*SW8. Consider installing infiltration (trench) swale the entire length on the downslope side of the path to facilitate meeting the standards 2,3,4 and 6 more fully. VHB: Unlike a typical development project with extensive impervious surfaces that uses structural BMPs to re-route stormwater to other areas*

entirely, the Project design provides for stormwater recharge and treatment within the immediate vicinity of the bike path footprint. The stormwater design provides structural stormwater infiltration BMPs and semi- structural/non-structural "impervious area disconnection" BMPs (redirecting stormwater from areas of impervious cover to areas of pervious cover). The impervious area disconnection BMPs will allow stormwater to discharge in adjacent vegetated areas where it will naturally infiltrate. Although DEP's stormwater management regulations do not provide recharge credit for this non-structural stormwater BMP, EPA guidance recognizes volume and pollutant reductions for the impervious area disconnection BMP (with an impervious area to pervious area ratio as low as 8:1 and no restrictions on slope). The stormwater management design also reflects the fact that stormwater runoff from bike paths is a limited source of pollutants such as total suspended solids and phosphorus. The cost of installation and maintenance of an infiltration trench is not justified by the nominal water quality and recharge benefit that would be provided by an infiltration trench. Based upon these factors, the Applicants do not plan to install an infiltration trench along the entire length of the downslope side of the path.

BETA2: The Massachusetts Stormwater Standards require the implementation of BMPs to manage runoff rates, recharge capacity, pollutant potential, and more from the limits of a Site. While low-lying vegetated areas may exist near the bike path, many of these areas are outside the limits of the Site on properties under separate ownership. To utilize these areas for stormwater management would require an agreement with these owners to ensure that they will always function in the present-day capacity, as otherwise there is no guarantee that future development will not alter drainage patterns. Furthermore, the cumulative increase in uncontrolled stormwater runoff to these areas can result in increased flooding, erosion, pollution, and other impacts which are particularly egregious given the proximity to resource areas and wildlife habitats.

Further discussion of these matters has been provided in the sections for Standards 2, 3, 4, and 6. BETA recognizes that sufficient stormwater treatment may be provided without an extreme measure such as an infiltration trench along the downgradient edge of the walkway in the attached watershed worksheets. Prioritize addressing watershed within stormwater critical areas (red).

No untreated stormwater (Standard Number 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 project is near numerous wetland areas with minimal treatment. Stormwater from the project area will runoff, untreated, into these resource areas for long stretches of the project area. While no piped outfalls are proposed, the proposed swales and grading patterns will direct runoff into/towards wetlands. Check dams are proposed for swales identified in the plans, but not those created by grading.

SW9. *Provide outlet control/overflow devices such that erosion and sedimentation will be controlled.* VHB: The plans were updated to include outlet protection at an area of increased infiltration at station 501+00 and a proposed deep surface basin at station 533+50. BETA2: *Revisions noted. Provide outlet control/overflow devices at all infiltration areas.*

SW10. *Identify where swales will outlet to slopes and flow down slope. Proposed grading will result in the creation of swales alongside the trail for significant portions of its length. Provide calculations showing that these swales can convey proposed flows. Provide outlet aprons for these swales to control sedimentation. For all swales, show that swale lining is capable of managing these flows without losing stability or eroding.* VHB: The Stormwater Management Plan and plan set were refined to include additional information regarding swale lining and outlet protection specifications and calculations. Calculations analyzed both swales and areas of increased infiltration and have shown that in all but one location, flow does not build up erosive velocities greater than the erosion-resisting capacity of

the vegetation restored with the proposed seed mix, therefore, outlet aprons are not necessary. At stations 753+50 to 757+50 sod seed mix was added to account for higher velocities, and an outlet apron was added at station 753+50. *BETA2: Calculations for conveyance swales and infiltration basins have been provided. Provide outlet control devices for BMPs P-10.13A, P-10.4A, DP-10.4B, and DP-10.14; these swales/basins were shown to have high flow velocities which are likely to cause erosion at the discharge location. However, it is apparent that proposed grading will result in the creation of "swales" in several areas (e.g. Station 392) that have not been called out in the plans. Note these locations on the plans and provide calculations to ensure that sedimentation and/or degradation will not occur.*

*SW11. Provide sizing calculations for riprap aprons. VHB: Sizing calculations for riprap aprons are included in the revised Stormwater Management Plan. BETA2: Calculations provided – issue resolved.*

Post-development peak discharge rates (Standard Number 2): *Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.* The project as proposed provides stormwater management in the form of water quality swales, grassed swales, a surface basin, and re-establishment of vegetation. The applicant proposes to meet this standard to the maximum extent practicable due to the limited space available for stormwater BMPs. As such, several design points will see an increase in peak discharge rates.

The watershed maps include substantial areas outside the proponent's property and project limits possibly hiding the impacts of the project on direct abutters properties or sensitive resource areas. Typically, stormwater analysis areas include the proponent's property and any upgradient areas that shed stormwater onto the Applicants' property to evaluate the impact of the property on the direct downgradient property.

*SW12. Revise and limit pre- and post- development areas to include the Applicant's property and any upgradient area that sheds stormwater runoff to the Applicant's property. VHB: The Project is a long linear project that discharges to areas near multiple waterbodies, wetlands, and low-points and qualitatively differs from other forms of development. Therefore, design points were chosen that represented these macro-scale low points, wetlands, or waterbodies. Drainage areas were extended past the MBTA ROW to capture both stormwater coming onto the ROW and stormwater that travels to those design points. This was done to provide a comparison of the overall hydrologic conditions of these design points and potential changes from pre- to post-development conditions. The stormwater analysis did consider limiting the watershed areas to the upgradient areas that shed onto the ROW. However, a high-level modeling analysis that limited the watershed areas in this way along a representative 1,000-foot length within an 80-foot-wide corridor similar to the Project's corridor showed that during a 100-year storm the runoff would only increase by 0.7 cubic feet per second. The existing conditions portion of the analysis assumed cover types of "gravel roads" (to represent the rail bed) and "woods-good" (a cover type that includes forest canopy and groundcover), and the proposed conditions portion assumed "pavement" (to represent the bike path) and "meadow" for varying hydrologic soil groups. This analysis indicated that that updating the watersheds is not necessary, the project would continue to have no detrimental downstream impacts and the update would not result in changes to the stormwater management design. BETA2: This high-level modeling analysis has not been provided to BETA, and thus its accuracy cannot be verified. Inclusion of downgradient areas in the stormwater analysis is unnecessary and serves to diminish the impacts expected of the project. Furthermore, many time of concentration flowpaths have been modeled entirely within these downgradient areas and thus do not account for the effect the proposed bike path will have on flow times. The downgradient limits of the Watersheds should typically be the property line and/or wetland boundaries to show the impact anticipated on these*



areas.

*At a minimum, revise watersheds limits for 5.8, 5.9, 5.11, 5.13, 5.14, 5.15, 5.17, 5.18, 5.21, 6.5, 6.10, 6.11, 6.12, 6.13, 6.14, 7.1, 7.2, 7.4, 7.5, 8.2, 8.3, 8.6, 8.10, and 10.2. These Watersheds generally include large downgradient areas that are not relevant to the project.*

- SW13. *In the HydroCAD model the current railroad bed are identified as gravel roads. Much of the bed has developed a forest matting and is overgrown with trees and brush. In limited areas where there are narrow paths these could be model as dirt, revise calculations accordingly. VHB: The existing gravel bed remains throughout the existing railroad bed including in overgrown areas. The gravel bed has had a reduction in void space as a result of years of sediment deposition especially in overgrown areas, which reduces the infiltration capacity of this material. The gravel road curve number most accurately represents the runoff conditions, including in overgrown areas, throughout the current railroad bed due to these conditions. BETA2: BETA walked the entire length and review all photos taken and notes that, if there were no rails left in place, it is unlikely a hydrologist would classify the surface as gravel. Trains typically do not transport sediment like cars and, without supporting data, the assertion that the railroad bed is most accurately represented by a gravel road CN is unverifiable. Provide supporting soil test data or revise CN value as described above.*
- SW14. *Clarify how soil groups have been determined for areas listed as HSG Unknown. VHB: Soil groups for HSG unknown soils were determined by evaluating nearby known HSG and applying those to the unknown soils, which is consistent with standard engineering practice. BETA2: The soil groups listed as HSG Unknown are surrounded by a variety of soil types, including HSG A, HSG A/D, and HSG B/D. It does not appear that a soil group of HSG D can be applied to all of these areas with certainty without additional soil testing to evaluate subsurface conditions. Provide further analysis of the soil in these areas or use the higher rate adjacent HSG. In addition, identify HSG unknown on the Watershed Plans for clarity.*
- SW15. *Use known surface type instead of “unpaved” to better calculate Tc for shallow concentrated flow. VHB: The HydroCAD calculations were revised based on the known surface type. BETA2: Calculation revised – issue resolved.*
- SW16. *Verify watershed area used for EX-5.11, PR-7.2, PR-8.4, PR-8.10, EX-9.1, EX-10.11, EX-10.12, EX-10.6; The area in HydroCAD varies significantly from that shown on the plans. VHB: The specified watershed areas were verified. Watershed areas for EX-9.1 and EX-10.6 were updated based on this review. BETA2: Areas reconciled – issue resolved.*
- SW17. *Verify watershed area used for 5.8, 5.13, 5.14, 5.16, 5.17, 5.18, 6.14, 7.1, 7.3, 7.4, 8.3B, 8.4, 8.6, 8.7, 8.8, 8.9, 8.10, 8.11, 10.2, 10.8, 10.9 (Existing and Proposed). The areas attributed to each soil group vary significantly from that shown on the plans. VHB: The specified watershed areas, soil groups, and land use were verified. No figure or calculation changes are necessary. BETA2: Watersheds appear to be generally consistent between the model and watershed plans, except for the following:*
- 5.8: Watershed plans show a 1.62 AC area of HSG B/D soil. This area is near to an undrained area and thus the second HSG (D) should be used in the model.*
- 5.14: The area of HSG B shown on the watershed plans is 1.96 AC +/-, yet the model shows it as 3.268 AC. The area of HSG B/D is 3.95 AC +/-, yet the model lists 2.88 AC.*
- 6.14: A 0.594 AC area of HSG C soil is used in the HydroCAD model which is not depicted on the Watershed Plans.*

SW18. *Provide location of Watershed PR-6.15. VHB: The location of Watershed PR-6.15 was added to the watershed figures. BETA2: Plans revised – issue resolved.*

SW19. *Review routing of watersheds into basins. In many cases, only a portion of each watershed will drain into the Basins, rather than the entire area as modeled in HydroCAD. Sub-watersheds should be created as necessary to reflect this. VHB: Watershed areas were refined and are included in the figures and in the HydroCAD reports in Appendix B. BETA2: Routing revised – issue resolved.*

SW20. *Provide means of controlling runoff that will be directed/discharged onto Town streets. VHB: There are currently no direct connections from the MBTA ROW to the Town of Sudbury drainage system and the Project does not propose any such connections. There is currently overland runoff from the MBTA ROW that discharges onto Town streets under existing conditions at Dutton Road, Peakham Road, Horse Pond Road, and Union Avenue. These four roads have a total of 11 design points that discharge to the roads:*

- Dutton Road: Design Points 6.1, 6.2, and 6.3;
- Peakham Road: Design Points 6.15 and 7.3;
- Horse Pond Road: Design Points 7.8, 7.10, 7.11, and 7.12;
- Union Avenue: Design Points 8.10 and 8.11.

*A shown in Tables 3 through 14 of the Stormwater Management Plan, in most instances these discharges have been reduced by the project design or remain the same under proposed conditions. In the locations where the discharge will increase, it is a nominal amount and therefore no additional means of controlling runoff is necessary. BETA2: Grading indicates that localized, concentrated flows may be created onto Horse Pond Road and the Eversource Driveway. While the overall peak discharge rate to these roads may be decreasing, the presence of new impervious areas and removal of vegetation poses a risk of increased localized runoff which is exacerbated by the swale-like conditions directing flow towards the streets. Provide means of preventing sedimentation onto the roads caused by channelized runoff.*

*Recharge to groundwater (Standard Number 3): Loss of annual recharge to groundwater should be minimized through the use of infiltration measures to maximum extent practicable. The project proposes a paved path, resulting in an increase in impervious area. Limited groundwater recharge is proposed via linear infiltration basins and water quality swales throughout the project. The applicant proposes to meet this standard to the maximum extent practicable indicating that providing the required recharge volume would result in clearing of additional vegetation. Provided calculations show that 21,121 c.f. of recharge volume is required, of which only 6,116 c.f. will be provided.*

SW21. *Tabulate comparison of runoff volume to each watershed for pre- and post-development conditions. The Site is abutted by low-lying areas and thus risk of flooding must be considered (8.0(A)(3)(i)). VHB: The Stormwater Report was updated to include a comparison table of runoff volume to each design point for pre- and post-development conditions. BETA2: Comparison table provided. Tables show an increase in runoff volume for numerous watersheds which may result in a risk of flooding. Refer to comment SW8.*

SW22. *To address compliance to the maximum extent practicable provide a complete evaluation of all possible infiltration measures per Standard 3, such as infiltration beneath the footprint of the trail or in areas devoid of vegetation such as the sandy area near northern Hop Brook. As discussed above, proposed grading will create low-lying areas which can potentially be used as infiltration areas dependent on presence of vegetation. VHB: See responses to BETA Comments C3 and SW8. BETA2: As*

*further discussed in SW8, recharge must be provided within the Site, not on adjacent properties which cannot be maintained by the applicant. There exist many areas along the bike trail outside of resource area buffer zones where infiltration basin could be proposed without increasing the area of disturbance. Provide infiltration BMPs in these areas to meet the required recharge volume. In particular, a greater effort should be made to meet the Recharge volume in the Zone II Wellhead Protection Area.*

*In addition, given the size of the Site, the pre- and post-groundwater recharge conditions should be evaluated for local areas and not just the overall 4.3-mile footprint. Provide a comparison table for each watershed (or similarly appropriate delineation) to evaluate local groundwater impacts. If certain Watersheds are proposed to be provided recharge only to the maximum extent practicable, then the specific impact on groundwater must be known.*

- SW23. *Provide detail for linear infiltration basins and show required grading on cross sections. Identify design criteria such as outlet weir elevation on the plans/details. Show top elevation of check dams to ensure proper flow between cells. VHB: A detail for areas of increased infiltration was added to the plans. The top elevation of each check dam within areas of increased infiltration was added to the plan set. BETA2: Detail provided. Include notes identifying seed mix and construction practices recommended by the Massachusetts Stormwater Handbook, Volume 2. Ensure that no portion of the infiltration basin has a longitudinal slope greater than 1%.*
- SW24. *Provide location and label of proposed basins on the drain area plans. Clarify location of Basins 5.18, 8.4, 8.5, and 10.13, BETA was not able to see on the site plan set. VHB: The watershed figures were updated to clarify the location of each proposed BMP. BETA2: Plans revised. Indicate location of areas modeled as "low points," e.g. Pond P7.6, P7.8, etc. If low points are located outside of the Site, then they should be excluded from the analysis as their impact on discharge rates and runoff volume cannot be guaranteed by the applicant. If they are located within the Site, then they must be designed/maintained as infiltration basins to ensure long term operation.*
- SW25. *Provide minimum 1' of freeboard for all linear infiltration basins. BETA notes that peak elevation for some basins is above the crest height of the proposed trail. VHB: The Project meets the structural BMP requirements of Standards 2, 3, 4 and 6 to the maximum extent practicable. Please refer to the response to BETA Comment C3. The Project was designed to provide 1 foot of freeboard to the proposed bike path in all locations where it was possible to do so without requiring a significantly larger limit of work. BETA2: BETA recognizes that a 1' freeboard may be impractical in some areas. However, several of the proposed basins are located outside of resource area buffer zones and can be expanded without increasing area of disturbance or expanding limit of work. Enlarge basins, where possible, to meet this requirement to the maximum extent practicable. If the freeboard cannot be provided, ensure that emergency spillways are sufficiently sized and properly positioned to control excessive stormwater volumes.*
- SW26. *Review HydroCAD model for basins to ensure that surface areas and elevations in model match those depicted in the plans/sections. Basins designed in HydroCAD are larger than those shown on the plans. VHB: The HydroCAD surface areas were refined in the updated Stormwater Management Plan. Surface areas were summed at each area of increased infiltration to create a composite surface area that conservatively reflects the storage area behind each check dam. This provides a conservative calculation in order to document compliance with Standard 2, 3, and 4. BETA2: The areas of basin surface area shown on the plans does not match that used in the model (e.g. Basin 5.8B shows an area of 680 s.f. +/- on the plans, but an area of 1,673 s.f. is used in the model). This discrepancy may be due to a lack of grading detail on the plans. Provide proposed contours for each infiltration basin,*

*potentially on new, enlarged sheets.*

SW27. *Provide HydroCAD model for the basin near Station 731. VHB:* The HydroCAD results were included in the previous submission of the Stormwater Management Plan for the increased area of infiltration from STA 730+00 LT to 732+00 LT under BMP number 10.7. The body of the Stormwater Management Plan was updated to clarify this. *BETA2: Model provided – Issue resolved.*

SW28. *Conduct test pit/borings at the location of each proposed “area of increased infiltration” to verify soil conditions, infiltration rates, and groundwater levels. VHB:* Groundwater and soil data from on-site borings were reviewed to verify soil conditions, groundwater levels, and to estimate Rawls Rates where data is available. The Project's boring data is included in Appendix C of the Stormwater Management Plan. *BETA2: Information provided. Soil borings have been completed near to the majority of infiltration areas, with the exception of Basin 6.2 (STA 501), 6.6 (STA 511), 8.5A (STA 579). Complete borings/test pits in these areas. Additional soil testing should be conducted in the area of Basins 8.2B, 8.3B, 8.4B (STA 570) due to the length of these basins which may result in variable soil conditions. Furthermore, BETA recommends a condition requiring that additional soil borings/monitoring wells be conducted within the footprint of each basin during construction to be reviewed and approved by the Town. Per MassDEP recommendations, one soil boring should be conducted and one monitoring well installed for every 5,000 sq. ft. of basin area, with a minimum of three soil borings per basin.*

*Verify Rawl's Rates used for Basin Design. Borings typically indicate a subbase of Silty SAND or SAND in proposed infiltration basin areas, but varying Rawl's Rates associated with Loamy Sand, Sandy Loam, Silt Loam, and Sandy Clay Loam have been used in the various models with no clear justification. For infiltration over the thermal fluidized backfill should use the 1.4 in/hr as noted above.*

*Provide Soil Boring logs for B-39, B-MP-7, and all other borings identified on the Appendix C figures. BETA cannot verify if basins local to these borings have been modeled to reflect analyzed soil conditions.*

SW29. *Show that water quality swales will dewater within 72 hours and that seasonal high groundwater is not within 2-4 feet of the swale bottom. VHB:* BMPs called out as "Water Quality Swales" in the previously submitted Stormwater Management Plan were revised to match the plans, which label these areas as "Swales." These conveyance swales were not included in calculations to document compliance with Stormwater Standards 2, 3, 4 or 6. Structural BMP locations for areas of increased infiltration were chosen to capture water before discharging to critical areas and to minimize disturbance to existing vegetation to the maximum extent practicable. Available groundwater data from the Project's boring locations was reviewed to confirm at least 2 feet of separation from the bottom of the proposed structural BMPs. The Project's boring data and calculated drawdown time for areas of increased infiltration are included in Appendix C and Appendix D of the Stormwater Management Plan, respectively. *BETA2: Drawdown calculations provided. Note that drawdown rates may need to be adjusted per comment SW 28. Revise Basin 10.6A (Identified as 10.8A on the plans) to include a 2' separation between the bottom of the basin and the groundwater elevation or complete appropriate mounding analysis.*

SW30. *Provide provisions to protect infiltrative capacity of swales and “area of increased infiltration”. VHB:* See response to Comment SW46 regarding the long-term operation and maintenance of stormwater BMPs. See response to Comment SW41 for discussion on construction period maintenance of stormwater BMPs. *BETA2: Further discussion of this matter will be under Comments 41 and 46.*

SW31. *Not all new impervious areas are directed to recharge BMPs, provide capture area adjustment analysis (MSWH vol.3, ch.1 pgs. 27 – 28). VHB:* Capture area adjustment calculations were previously submitted as Appendix C of the Stormwater Management Plan. *BETA2:* *The provided calculations indicate that 42% of the total impervious area is directed to infiltration BMPs. Per MSWH Vol 3., at least 65% of this area must be directed to infiltration BMPs to achieve required recharge. Provide additional infiltration BMPs to meet this 65% minimum.*

80% TSS Removal (Standard Number 4): *For new development, stormwater management systems must be designed to remove 80% of the annual load of Total Suspended Solids.* The project proposes the use water quality swales and infiltration basins to provide limited treatment of stormwater. The applicant proposes to meet this standard to the maximum extent practicable as the project expects only pedestrian traffic, rather than the more significant pollutant loading of vehicles. Provided calculations indicate that 18,847 c.f. of water quality volume is required, of which 6,116 c.f. will be provided.

The MassDEP Stormwater Handbook does not qualify impervious surfaces relative to amount of vehicular traffic. Replacing forested areas with impervious surfaces and grass areas will increase the phosphorus load in runoff. Since some phosphorus binds to solids, it is important to reduce the solids being discharged to sensitive or critical resources areas.

SW32. *Revise TSS Removal worksheets. 80%/70% TSS removal credit can only be attributed to infiltration basins/water quality swales if combined with adequate pretreatment. VHB:* The TSS removal worksheets were updated to reflect pollutant removal rates published by EPA in order to highlight the Project's compliance to the maximum extent practicable for Standard 4. Although they do provide treatment benefits, swales and vegetated filter strips are not included in the TSS calculations because they are not considered recharge and treatment BMPs by MassDEP's current Stormwater Management Handbook. *BETA2:* *Upon further consideration sediment load is expected to be minimal, concentrate treatment is stormwater critical areas identified – see SW8.*

SW33. *Identify location of and provide detail for proposed vegetated filter strips. VHB:* Vegetated filter strips were removed from the TSS worksheets. *BETA2:* *Issue dismissed.*

SW-R1. *BETA2:* *Per Comment SW8, additional BMPs could be proposed to better meet the water quality volume requirements of this standard. Provide additional water quality volume particularly in watersheds bound for critical areas.*

*As discussed in comment SW22, the project is 4.3 miles long, yet a water quality volume analysis has been provided only for the entire site rather than localized areas. Provide water quality volume analysis for each watershed, or similarly appropriate delineation. Provide required water quality volume through the use of additional infiltration BMPs.*

Higher Potential Pollutant Loads (Standard Number 5): *Stormwater discharges from Land Uses with Higher Potential Pollutant Loads require the use of specific stormwater management BMPs.*

The project is not considered a LUHPPL – Not Applicable.

Critical Areas (Standard Number 6): *Stormwater discharges to critical areas must utilize certain stormwater management BMPs approved for critical areas. Portions of the project are within or near to critical areas, including outstanding resource waters (vernal pools), Zone II Wellhead Protection Areas, and coldwater fisheries. The applicant proposes to meet this standard to the maximum extent practicable due to the lack of space available for suitable BMPs and the limited potential for pollutants from the pedestrian trail.*

Hop Brook is shown on MassDEP 2014 Integrated List of Waters Map as impaired for total phosphorous. Additional impervious area will increase the phosphorous load to the brook increasing this impairment.

SW34. *Provide required BMPs to treat discharges in these critical areas.* VHB: See response to Comment SW8. The Project design provides structural and non-structural stormwater BMPs to provide treatment, detention, and infiltration for the proposed MCRT and avoid impacts to critical areas. The Stormwater Management Standards require that BMPs be set back 100 feet from vernal pools and that infiltrating BMPs be located at least 50 feet from any surface water including wetlands, which limits the available space for such stormwater features within this linear corridor. Bike paths are a limited source of pollutants and any additional structural BMPs would provide negligible benefits in comparison to the proposed design which is unlikely to impact critical areas. *BETA2: Treatment of stormwater should at a minimum be focused on stormwater critical areas identified in SW-8.*

Redevelopment and Other Projects Subject to the Standards only to the maximum extent practicable (Standard Number 7): *Redevelopment of previously developed sites must meet the Stormwater Management Standards to the maximum extent practicable. The project does not qualify as redevelopment however the Applicant is claiming that the project is a Limited Project and a Bike Path Project that only needs to meet the Standards to the maximum extent practicable.*

Construction Period Erosion and Sediment Controls (Standard Number 8): *Erosion and sediment controls must be implemented to prevent impacts during construction or land disturbance activities.* The project includes erosion control designed to mitigate construction period pollution. The project as currently depicted will disturb in excess of one acre of land and will be required to prepare a Stormwater Pollution Prevention Plan (SWPPP) and file a Notice of Intent with EPA. A description of erosion control BMPs has been provided with the submission outlining practices such as silt fence, straw/hay bales, compost filter tubes, catch basin protection, stabilized construction entrance, temporary seeding, slope protection, dewatering measures, and coir logs.

SW35. *Provide draft copy Stormwater Pollution Prevention Plan SWPPP for review.* VHB: Please refer to the draft SWPPP manual attached with the prior response to BETA comments dated June 25, 2020. *BETA2: SWPPP provided. BETA recommends a condition requiring the final, completed SWPPP be provided to and approved by the Town prior to the start of construction, including all information TBD such as project contractor. BETA offers the following comments regarding the SWPPP's contents:*

- a. *While specific construction phasing dates may not be known at this time, provide approximate duration of each phase/task.*
- b. *Provide general description on where temporary conveyance channels/basins may be used. Conveyance channels should not discharge runoff towards resource areas without proper treatment.*
- c. *Provide copies of correspondence identified in Section 9.1.1, 9.1.2, and 9.2.4.*
- d. *Provide Attachments E, F, G, O, P, Q, and S.*

SW36. *Provide provisions for management of soils including stockpile areas and assessment of contamination levels.* VHB: See responses to BETA Comments G2 and W23. *BETA2: To avoid redundant comments, this comment will be further discussed under G2 and W23.*

SW37. *Provide maintenance/inspection requirements for stabilized construction entrance and turbidity curtain.* VHB: As discussed within Section 5.5 of the NOI, Eversource and DCR will employ a qualified environmental monitor during both phases of construction. The environmental monitor will be

responsible for daily inspections of work areas, which includes stabilized construction entrances and turbidity curtains (if used). *BETA2: This information has been provided in the SWPPP – Issue resolved.*

- SW38. *Provide measures for street sweeping of Dutton Road, Peakham Road, Horse Pond Road, Union Avenue, and Boston Post Road during construction. VHB: Please refer to the draft SWPPP manual attached with the prior response to BETA comments dated June 25, 2020. BETA2: Information provided – Issue resolved.*
- SW39. *Provide perimeter erosion controls along the south side of the Site near stations 391+50, 405, 516, 545 through 555, 557, 565, and 753, and the north side of the Site near stations 565 through 569 and 580 through 585. VHB: These areas were evaluated during the Project design and it was determined that perimeter erosion controls are not required due to site conditions (i.e., slope) and proximity to wetland resource areas. BETA2: BETA recognizes that many areas of the Site's perimeter will not need erosion controls where topography is directed towards the Site. However, the areas referenced above include topography, based on the plans, that is directed away from the Site. Provide perimeter erosion controls in the areas identified above, and provide a note requiring perimeter controls at all site boundaries where topography is sloped away from the areas of disturbance. Also note that this comment included a mistake and should have read the north side of the Site near station 405.*
- SW40. *Provide a construction phasing plan that limits the area of the Site disturbed at any one time to mitigate environmental impacts and risk of erosion. VHB: The actual work to be performed in each area, as well as accompanying date(s) for when such work will be performed, will be established once a Contractor is engaged to perform the work. However, there is no need to limit the area of the Site disturbed at any one time because appropriate erosion control measures will be employed to minimize potential impacts and environmental monitors will be present throughout to confirm that all activities are being conducted in accordance with applicable permit conditions. BETA2: BETA defers to the Town regarding the need for a detailed sequencing plan. Provide a note requiring that perimeter controls be placed along the downgradient side of disturbed areas where topography is directed towards other portions of the existing/proposed trail work area.*
- SW41. *Provide measures to protect infiltration systems during construction. VHB: As described in the draft SWPPP manual, permanent infiltration BMPs shall not be used as temporary construction sedimentation basins without prior approval of the project engineer. BETA2: Even if infiltration basins are not intended for use as temporary basins, there is a risk that sediment will inadvertently flow into them during construction. Clarify time in construction sequence when basins will be constructed and means of repairing damaged infiltration basins if needed during site restoration.*
- SW42. *Revise inspection frequency to conform to Town of Sudbury requirements (9.0(B)(1)). VHB: See the draft SWPPP manual. Inspections will be conducted once every 7 days and within 24 hours of a rainfall event 0.25 inches or greater. BETA2: Frequency revised – issue resolved.*
- SW43. *Provide template for inspection forms (9.0(B)(3)). VHB: See the SWPPP manual for an inspection form template. BETA2: Revise inspection forms to require weather information since time of last inspection, duration of last storm event, and locations of any BMPs that need to be maintained, failed, or did not exist.*
- SW44. *Clarify if use of fertilizers is proposed; contradictory information is presented in narratives and plan set. VHB: The NOI narrative is correct and fertilizers will not be used on the Project Site. Note 2 on Sheet 130 of the Eversource plans was revised to remove the use of fertilizer on the jute mesh erosion*

control fabric. *BETA2: Information provided – issue resolved.*

SW45. *BETA recommends a condition requiring a final, signed SWPPP be provided to and approved by the Town prior to the start of work. VHB: See response to BETA Comment W6. BETA2: This comment to be further discussed under W6.*

Operations/maintenance plan (Standard Number 9): *A Long-Term Operation and Maintenance Plan shall be developed and implemented to ensure that stormwater management systems function as designed. An Operation and Maintenance Plan (O&M) has not been provided. The narrative indicates that it is intended to be developed in the future.*

SW46. *Provide Operation and Maintenance Plan for stormwater controls meeting the requirements of the MassDEP Stormwater Handbook and Town of Sudbury requirements. VHB: An updated DCR Operations and Maintenance Plan ("OMP") and Long-Term Pollution Prevention Plan ("LTPPP") is attached. BETA2: O&M Plan provided. Include requirements of Standard 9, including:*

- a. Means to notify future property owners of need for maintenance*
- b. Estimated operations and maintenance budget.*
- c. Provide inspection/maintenance measures for catch basin meeting the recommendations of the MASWH Volume 2.*
- d. Revise inspection/maintenance measures for drainage swales, infiltration basins, and check dams to match the recommended activities and frequencies outlined in the MASWH Volume 2.*
- e. Operation and maintenance for all culverts.*

SW47. *Provide map indicating location of all proposed BMPs. VHB: The Stormwater Management Plan figures have been updated to clarify the location of each proposed BMP. BETA2: The Watershed figures identify the location of proposed infiltration basins, but not the proposed swales. The purpose of the map, required by the Mass. Stormwater Handbook, is to show all BMPs in an easy to read plan for operation and maintenance. Provide a map indicating the location of all proposed BMPs in relation to the access road and site entry points.*

SW48. *Provide inspection measures meeting the requirements of 9.0(C). VHB: Section 9.0C of the Sudbury Stormwater Management Bylaw Regulations addresses Construction Inspections. The draft SWPPP manual provided with the response to BETA comments dated June 25, 2020, addresses inspection measures during construction. BETA2: This comment was intended to refer to Section 8.0(C), which describes the requirements of the long-term O&M plan. The following measures must be provided:*

- a. Means of making the required O&M log available to the MassDEP and the Planning Board*
- b. Entries on the inspection forms for spillways, vegetation, and outlet channels.*
- c. Procedure for changes to the O&M plan.*

SW49. *Provide inspection and maintenance procedures for culverts. VHB: Inspection and maintenance of proposed and existing structures will be conducted in accordance with the OMP and LTPPP. BETA2: Clarify if the requirements for "drainage structures" are intended to apply to culverts.*

SW50. *Implement a long term pollution prevention plan to control runoff into Hop Brook, which is an impaired waterbody. VHB: The OMP and LTPPP discuss the measures that will be implemented, which are consistent with DCR's NPDES Stormwater MS4 Permit and their Stormwater Management Plans. The Mass Central Rail Trail ("MCRT") serves non-polluting vehicles and no wintertime maintenance will be conducted so the operation of the MCRT will not produce any stormwater discharges that will contribute pollutants to Hop Brook. BETA2: Pollution plan provided - issue resolved.*



Illicit Discharges (Standard Number 10): *All illicit discharges to the stormwater management systems are prohibited.* The narrative indicates that no sanitary sewer infrastructure is known to exist on-site. Otherwise, no illicit discharge compliance statement has been provided.

SW51. *Provide illicit discharge compliance statement signed by the Owner.* VHB: A statement regarding illicit discharge was provided in the Stormwater Management Plan. Once the Project is constructed a finalized and signed illicit discharge statement will be provided. BETA2: *BETA recommends a condition requiring the signed version of the statement be provided prior to construction.*

## BRIDGE CONSTRUCTION IMPACTS

The project includes work on two existing bridges over Hop Brook.

Work associated with former Bridge 128 (station 400+10 to 400+55) approximately 1680 feet west of Dutton Road includes the replacement of the timber deck (12 feet wide by 43± feet long). Work areas include steel sheeting and crane mats, 85'x40' on west side and 95'x40' on the east side.

Work associated with former Bridge 127 (station 725+9 to 725+60) approximately 1350± feet east of Boston Post Road includes the replacement of the timber deck (12 feet wide by 43± feet long). Work areas include steel sheeting and crane mats, 85'x40' on west side and 95'x40' on the east side.

The crane mat detail indicates that timber cribbing will be installed at 20 feet from the centerline and the plans indicate that this is the limit of work and there are no additional impacts beyond the 20 feet.

- B1. *Confirm that there will not be any additional disturbance or impacts to resource areas outside the crane mat footprint.* VHB: See the response to Comment WPA6: [Conceptual crane mat sections are provided on Sheet 125 of the Eversource NOI plans. The contractor will be required to install the mats within the footprint that is shown on the plans. The actual cross section for the crane mats will be based on the contractor's means and methods and the exact layout will be determined in the field]. BETA recommends a condition requiring the contractor to provide detailed plans to verify impacts prior to pre-construction meeting.
- B2. *Recommend that a condition be included that requires a detailed plan for the construction of the crane mat.* VHB: See the response to Comment WPA6. BETA2: See B1
- B3. *Include temporary impacts associated with cutting timber piles. Recommend removing timber piles 2 feet below mud line.* VHB: The timber piles are being cut at the mud line by divers to minimize impacts to Land Under Water Bodies and Waterways and no permanent or temporary impacts are anticipated. Requiring the piles to be cut 2 feet below the mud line would require excavating the riverbed to get access to the piles. This would increase the impact area and would have the potential to cause turbidity in the flowing water from the excavation and backfilling. BETA2: BETA defers to the Commission on this issue.
- B4. *Recommend utilizing both erosion control type C options at bridgework areas.* VHB: See the response to Comment WPA25. [See response to Comment WPA24 regarding placement of timber mats in LUW and the use of erosion controls that will avoid turbidity within Hop Brook. At the time of construction, a silt curtain or another measure that is appropriate based on field conditions will be used]. BETA2: See B1

If we can be of any further assistance regarding this matter, please contact us at our office.

Very truly yours,  
BETA Group, Inc.



Stephen Borgatti  
Staff Engineer



Philip F Paradis, Jr., PE  
Associate

cc: Marta Nover, BETA Group, Inc.

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### Summary of Areas without Treatment and Recommendations

Station

<u>Watershed</u>	<u>Side</u>	<u>Fro</u>	<u>To</u>	<u>Recommendation</u>
5.6	S	351	362	Outside Sudbury Town Limits, Defer to Town of Hudson
5.7	N	355	362	Outside Sudbury Town Limits, Defer to Town of Hudson
<b>5.8</b>	S	365	372	<b>See notes 1 &amp; 2 and add BMPs in area outside of buffer zones.</b>
<b>5.9</b>	N	362	370	All paved surfaces directed south. No further measures required.
<b>5.12</b>	N	372	400	All paved surfaces directed south. <b>Mitigate peak discharge rate/volume increases.</b>
<b>5.10, 5.13</b>	S	372	400	<b>See notes 1 &amp; 2 and add BMPs in area outside of buffer zones.</b>
<b>5.14</b>	S	400	407	<b>See notes 1 &amp; 2 and add BMPs in area outside of buffer zones. Expand Basin 5.14 as practicable.</b>
<b>5.15, 5.16, 5.17, 5.19</b>	N	400	414	All paved surface graded south. No further measures required.
<b>5.18</b>	S	407	414	<b>See notes 1 &amp; 2</b>
5.20	S	414	417	All paved surfaces directed north. <b>Mitigate peak discharge rate/volume increase.</b>
<b>5.21</b>	N	414	417	<b>See notes 1 &amp; 2. Consider grading trail south and providing BMP on that side to decrease likelihood of vernal pool impact.</b>
6.1, <b>6.7</b> , 6.9, 6.10, <b>6.12, 6.13</b>	N	500	530	All paved surface graded south. <b>Mitigate peak discharge rate for DP-6.7</b>
6.2	S	500	508	Increase basin size to mitigate peak discharge rate/volume increases
<b>6.6</b>	S	516	523	<b>See notes 1 &amp; 2.</b>
<b>6.14</b>	S	523	530	<b>See notes 1 &amp; 2.</b>
<b>7.2, 7.3, 7.5, 7.7, 8.1, 8.3, 8.6, 8.9</b>	N	530	599	Paved surface graded south. <b>Mitigate peak discharge rate/volume for DP-8.3</b>
<b>7.1, 7.6</b>	S	534	552	<b>See notes 1 &amp; 2.</b>
<b>7.8</b>	S	552	555	See note 1. Control runoff to Horse Pond Road
<b>8.2</b>	S	556	565	<b>See notes 1 &amp; 2. Consider grading trail north and providing BMP on that side to decrease likelihood of vernal pool impact.</b>
<b>8.4</b>	S	576	579	<b>See notes 1 &amp; 2.</b>

#### Priorities Legend

- Black Low Outside resources areas  
No new pavement
- Green** Med. Non-critical Resource areas
- Red** High Critical Resource Areas

Critical Areas	
Category	Watersheds
Vernal Pool	5.9, 5.17, 5.18, 5.19, 5.21, 6.11, 6.12, 6.13, 8.1, 8.2, 8.9, 10.9, 10.14
Cold Water Fishery	5.8, 5.12, 5.13, 5.14, 5.15, 9.1, 10.1, 10.3, 10.4, 10.5
Zone II WPA	7.1 & 7.5 thru 10.4

- Notes:
- 1 Provide treatment and mitigate peak discharge rate/volume.
  - 2 Consider low-impact BMP such as infiltration trench due to vernal pool/wetland proximity.

### Summary of Areas without Treatment and Recommendations

Watershed	Side	Station		Recommendation
		Fro	To	
8.5	S	588	595	See notes 1 & 2.
8.7	S	593	595	See notes 1 & 2.
8.8	S	595	602	See notes 1 & 2.
8.10	N	599	602	Reduction in Stormwater discharge/volume anticipated. Provide treatment.
8.11, 10.2	S	599	714	All paved surface graded north. Mitigate peak discharge rate/volume increase
9.1	N	700	711	See notes 1 & 2.
10.1	N	711	714	See notes 1 & 2. Consider grading trail south and providing BMP on that side to decrease likelihood of Cold Water Fishery impact.
10.1	N	714	716	All paved surface graded south. No further measures required.
10.2	S	711	714	All paved surface graded north. No further measures required.
10.2	S	714	716	See notes 1 & 2.
10.3	N	716	718	See notes 1 & 2. Consider grading trail south and providing BMP on that side to decrease likelihood of Cold Water Fishery impact.
10.3, 10.5	N	718	728	Paved surface graded south. Mitigate peak discharge rate/volume increases.
10.4	S	716	718	Paved surface graded south. Mitigate peak discharge rate/volume increases.
10.4	S	718	725	See notes 1 & 2.
10.6	S	726	728	See notes 1 & 2.
10.6	S	728	739	Paved surface graded north. Mitigate peak discharge rate/volume increases.
10.7	N	728	735	Provide treatment (where not already provided) and mitigate peak discharge rate/volume increases. See note 2
10.8	N	741	743	Paved surface graded south. Mitigate peak discharge rate/volume increases.
10.9, 10.11, 10.13, 10.14	N	739	768	Paved surface graded south. Mitigate peak discharge rate/volume increases.
10.6, 10.12	S	739	753	See notes 1 & 2.
10.15	S	758	767	See notes 1 & 2.

#### Priorities Legend

- Black Low Outside resources areas  
No new pavement
- Green Med. Non-critical Resource areas
- Red High Critical Resource Areas

Critical Areas	
Category	Watersheds
Vernal Pool	5.9, 5.17, 5.18, 5.19, 5.21, 6.11, 6.12, 6.13, 8.1, 8.2, 8.9, 10.9, 10.14
Cold Water Fishery	5.8, 5.12, 5.13, 5.14, 5.15, 9.1, 10.1, 10.3, 10.4, 10.5
Zone II WPA	7.1 & 7.5 thru 10.4

- Notes:
- 1 Provide treatment and mitigate peak discharge rate/volume.
  - 2 Consider low-impact BMP such as infiltration trench due to vernal pool/wetland proximity.