

June 16, 2023
6842

Groton Zoning Board of Appeals
173 Main Street
Groton, MA 01450

**RE: 500 Main Street – Groton Farms
Comprehensive Permit Review
Groton, MA**

Dear Members of the Board:

We have received review comment responses from Nitsch Engineering regarding the above-mentioned project dated May 24th, 2023 & May 31st, 2023. We have addressed all plan modifications in the latest revision of plans and have summarized the changes below. The review comments are *italicized* with the responses from Dillis & Roy below them in **bold**.

WAIVERS

- Chapter 196, Signs – A waiver is being requested from the Town of Groton Signs Bylaw. Nitsch Engineering recommends the Applicant provide specific sections under this chapter from which they are requesting relief.*
D&R – The requested waiver list has been revised to include sections from Chapter 196.
- Chapter 215, Wetlands – A waiver is being requested from the Town of Groton Wetlands Protection Bylaw. Nitsch Engineering recommends the Applicant provide specific sections under this chapter from which they are requesting relief.*
D&R – The requested waiver list has been revised to include sections from Chapter 215.
- Chapter 344, Article III, Wetlands Protection Regulations – A waiver is being requested from the Town of Groton Wetlands Protection Regulations. Nitsch Engineering recommends the Applicant provide specific sections under this chapter from which they are requesting relief.*
D&R – The requested waiver list has been revised to include sections from Chapter 344.

SUBDIVISION RULES & REGULATIONS

4. *Section 381-13.A.(3) states that the sidewalks shall have a foundation of eight inches or more of compacted gravel.*

The Plans show a bituminous sidewalk detail on sheet C8.2 with a gravel base of 6 inches. Nitsch Engineering recommends the Plans be revised to comply with this section.

D&R – The bituminous sidewalk detail has been revised to propose a foundation with 8” of compacted gravel.

SITE PLAN REVIEW

5. *Section 381-39.C states that the Plans must include the location and name of all streets and an indication of whether it is public or private. This also includes widths for all streets within 300 feet of the site.*

The Plans do not show existing street widths and whether they are public or private. Nitsch Engineering recommends this information be added to the Plans.

D&R – All existing streets within 300 feet of the site have been labeled as public or private. Width dimensions for all subject streets have also been added to all sheets.

6. *Section 381-39.H states that the Plans shall include a cut and fill analysis of the existing and proposed topography.*

The Plans do not include a cut and fill analysis. Nitsch Engineering recommends this analysis be provided for review.

D&R – A cut and fill analysis has been prepared for the site & is attached to this response letter.

7. *Section 381-40.B.(4) states that the Plans shall indicate the light hours of operation, especially shut off times.*

The Plans do not include the light hours of operation and shut off times. Nitsch Engineering recommends the Plans be updated to include this information.

D&R – This information will be indicated on the Landscaping Plans & will be submitted under separate cover.

GENERAL COMMENTS (COMPREHENSIVE PERMIT)

8. *If the proposed drainage basins (infiltration and wet basins) indicated on the Soil Erosion and Sediment Control Plans (sheets C3.1 and C3.2) are intended for use as temporary sediment basins during construction as well as permanent infiltration basins in the final proposed condition, then it is recommended that the Applicant provide a label for the Contractor to remove sediment accumulated during the construction period prior to installation of the permanent basins. A minimum of 12" of material should be removed from the bottom of basin. If the proposed basins are not intended for use during construction, then additional measures are recommended for erosion and sediment protection of these areas during construction.*

D&R – Plan Sheets C3.1 & C3.2 has been revised to include notation relative to the removal of sediment from the temporary sediment basin locations during & after construction.

9. *The Plans do not include erosion control barrier or construction entrance details as referenced in the Soil Erosion and Sediment Control Plans. Nitsch Engineering recommends those details be added to the Plans.*

D&R – Erosion control barrier & construction entrance details have been added to the revised plans.

GROTON STORMWATER DESIGN CRITERIA AND THE MASSACHUSETTS STORMWATER MANAGEMENT STANDARDS

1. *Section 352-11.C.(5) states that to qualify as a treatment BMP, a recharge system must discharge to soils with infiltration rates less than or equal to 2.4 inches per hour when used as a treatment BMP.*

The Applicant is proposing to utilize recharge systems as treatment BMPs in soils with an infiltration rate greater than 2.4 inches per hour. The Applicant should revise the Plans to comply with this Section or request a waiver from the Zoning Board of Appeals. Nitsch Engineering would take no exceptions to this waiver request as the design currently meets the requirements of the Massachusetts Stormwater Management Standards.

D&R – The plans have been revised which converted the two previously proposed Infiltrations Basins to Constructed Stormwater Wetland Areas. These stormwater management areas do not provide groundwater recharge or infiltration; thus, this waiver has been removed from the requested waiver list. The recharge standard is being met in virtue of the fact that the impervious area is being reduced on site. Offsite runoff volumes are being reduced which translates to an increase in the onsite recharge.

2. *Section 352-11.C.(7) states that at least 80% of the TSS must be removed prior to discharge to an infiltration structure used for recharge if the discharge is within an area with a rapid infiltration rate greater than 2.4 inches per hour.*

The Applicant is proposing to utilize recharge systems in an area with a rapid infiltration rate greater than 2.4 inches per hour. Less than 80% TSS removal has been provided for runoff discharging to these recharge systems. The Applicant should revise the Plans to comply with this Section or request a waiver from the Zoning Board of Appeals. Nitsch Engineering would take no exceptions to this waiver request as the design currently meets the requirements of the Massachusetts Stormwater Management Standards.

D&R – Constructed stormwater wetlands have been proposed in lieu of the two proposed infiltration basins. These stormwater management areas do not provide groundwater recharge or infiltration; thus, this waiver has been removed from the requested waiver list.

- 3. Section 352-11.C.(14) states that a mounding analysis must be performed when the vertical separation from the bottom of an exfiltration system to seasonal high groundwater is less than four feet and the recharge system is proposed to attenuate peak discharge from a ten-year or higher twenty-four-hour storm. The mounding analysis must demonstrate that the recharge volume is fully dewatered within 72 hours and that the groundwater mound that forms under the recharge system will not break out above the land or water surface of a wetland. The Hantush or other equivalent method may be used to conduct the mounding analysis.*

The Applicant did not provide a mounding analysis for Infiltration Basins #1 and #2 which have less than four feet of separation to estimated seasonal high groundwater (ESHGW). A mounding analysis for these basins should be provided.

D&R – Constructed stormwater wetlands have been proposed in lieu of the two proposed infiltration basins. These stormwater management areas do not provide groundwater recharge; thus, groundwater mounding calculations are no longer required.

- 4. Section 352-13.G. states that the Applicant shall use the curve number (CN) values as provided in Table 2 to calculate stormwater runoff rates for pre-/post-construction ground surface conditions.*

The Applicant has used some CN values that are different from the values found in Table 2. The CN values used for grass cover assume a “good” condition while this Section requires CN values for grass cover assume a “poor” condition since the post-construction amount of grass cover cannot be predicted or guaranteed (refer to Note 2 under Table 2). The Applicant should provide supporting documentation for these CN values and request a waiver from this Section or revise the hydrologic calculations to only utilize CN values from Table 2.

D&R – The pre-developed & post-developed hydraulic models have been updated to utilize the recommended curve number values in Section 352-13, Table 2.

- 5. Section 352-24.D.(1) states that all drain pipes shall be at least 12 inches inside diameter and made of reinforced concrete conforming to Massachusetts Department of Transportation specifications for Class III pipe or such higher class as may be required by the depth of cover, which shall be not less than 36 inches where the pipe is subject to vehicular loads.*

The Plans indicate pipe material to be High Density Polyethylene (HDPE). The Applicant should revise the Plans to comply with this Section or request a waiver from the Zoning Board of Appeals. Nitsch Engineering would take no exceptions to this waiver request as HDPE is a common drain pipe material.

D&R – The requested waiver list has been revised to include Section 352-24.D(1) from the Groton Stormwater Regulations.

GENERAL COMMENTS (STORMWATER)

6. *On the Stormwater Checklist, the Project Type should be Redevelopment.*

D&R – The Stormwater Checklist has been revised accordingly.

7. *On the Stormwater Checklist, Standard 3 indicates that runoff from all impervious areas at the site discharges to the infiltration BMPs. Based on the Plans and recharge calculations this box should be unchecked.*

D&R – The Stormwater Checklist has been revised accordingly.

8. *On the Stormwater Checklist, both boxes should be checked off under Standard 6.*

D&R – The Stormwater Checklist has been revised accordingly.

9. *A minimum of one foot of freeboard is recommended for all proposed basins. Infiltration Basin #1 and the Wet Basin have been provided with less than one foot of freeboard.*

D&R – All berm elevations for proposed stormwater management areas have been revised to provide at least one foot of freeboard during the 100-year storm.

10. *The Stormwater Report Checklist notes that the Stormwater Pollution Prevention Plan (SWPPP) will be submitted before land disturbance begins. Nitsch Engineering recommends this requirement be included as a condition of the Comprehensive Permit.*

D&R – Acknowledged. A SWPPP will be prepared following approval (prior to construction) & submitted for review.

11. *The Plans should be revised to include the complete grading design for all sediment forebays, including their overflow elevation into the adjacent infiltration basin, so the provided sediment forebay volumes can be confirmed.*

D&R – The plans have been revised to show complete grading for all sediment forebays including their overflow elevations. Please refer to plans C5.1, C5.2, C5.3 & C5.4 for proposed grading.

12. *Separate sizing calculations should be provided for each sediment forebay draining into Infiltration Basin #1.*

D&R – Please refer to Appendix F within the revised Stormwater Report attached to this response letter.

13. *A sizing calculation should be provided for the sediment forebay at the Wet Basin.*

D&R – Please refer to Appendix F within the revised Stormwater Report attached to this response letter.

14. *The surface areas for the Infiltration Basins, including the bottom surface areas, should be for the basins only and should not include the sediment forebays. The stormwater calculations should be updated to exclude the sediment forebay areas/volumes from the infiltration basin areas/volumes.*

D&R – Acknowledged. Please refer to the revised stormwater calculations within the revised Stormwater Report attached to this response letter. Sediment forebay volumes have been removed from their associated storage volumes.

15. *Some drain pipe slopes are less than 0.5%. To ensure proper constructability, we recommend all drain pipe slopes be a minimum of 0.5%.*

D&R – The proposed drainage network has been revised to provide a 0.5% minimum slope for all 12”, 15” & 18” HDPE pipes. Due to on-site constraints, three proposed 24” drainage pipes will require a slope less than 0.5%. The minimum design slope for a 24” HDPE pipe is 0.15%, which maintains a scour velocity of 3 ft/s. The pipes have been designed at 0.2% slope or greater.

16. *Since the Wet Basin will have a permanent pool of water, the Applicant should consider providing a fence around the Wet Basin for safety reasons.*

D&R – A fence has been proposed around the perimeter of the proposed wet basin for safety reasons.

We trust this meets your needs at this time. If you have any questions or require any additional information, please contact the undersigned

Regards,

DILLIS & ROY

Civil Design Group, Inc.



Ryan Vickers, E.I.T.
Civil Engineer



Gregory S. Roy, P.E.
Vice-President

cc: Mr. Takashi Tada – Groton Land Use Director / Town Planner (via email)
Mr. Jared E. Gentilucci, PE, CPESC, LEED AP BD+C – Nitsch Engineering (via email)