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September 28, 2022

Effingham Planning Board
Attn: Theresa Swanick, Chair
68 School Street
Effingham, NH 03882

Subject: Engineering Review Letter
Meena, LLC
NH Route 25 & Leavitt Road
Effingham, New Hampshire
NPE Proj. No. 22026

Dear Board Members,

At the request of the Planning Board, Northpoint Engineering, LLC (Northpoint) has performed a **third** technical review of the updated plans and material for the subject project that have been provided to us. The application material and plan documents were reviewed to determine conformance with local regulations, State and Federal requirements as well as generally accepted engineering practices.

The material that we reviewed included, but was not limited to, the following items:

- Letter from Horizons Engineering dated September 8, 2022 (Horizons September Letter);
- Six sheet plan set prepared by Horizons Engineering last revised 9/8/22 that include a Cover Sheet, a Boundary Survey, an Existing Conditions Plan, a Site Plan, a Stormwater Management Plan, and a Stormwater Management Detail Plan sheet, (collectively referred to as the Current Plans in this letter);
- Spill Prevention, Control, and Countermeasure (SPPC) Plan prepared by Horizons Engineering, dated August 1, 2022 (note that cover page is dated June 2022);
- Stormwater Summary drainage report prepared by Horizons Engineering, dated August 25, 2022 (referred to as Drainage Report or Report in this letter);
- Inspection and Maintenance Manual by Horizons Engineering, dated August 2022 (referred to as I&M Manual in this letter);

We offer the following comments and recommendations:

1. We understand that the Board has made a determination that the project is not subject to the Special Use Permit requirement of Zoning Ordinance Article 22 Groundwater Protection. However, as discussed in the previous review letters, the project is subject to the Performance Standards of Section 2210. In fact, in their June submittal package, the applicant recognized and agreed that the Performance Standards apply to the project –

refer to item #1 in the Horizons cover letter of June 30, 2022. With a couple of exceptions discussed below, it appears that the project is meeting, or is attempting to meet, most of the performance standards listed in Section 2210. For clarity purposes, we recommend that the applicant prepare brief a narrative that discusses how the project is meeting each performance standard and/or why a particular standard does not apply to this project.

2. The very first item listed in the Performance Standards of Section 2210 requires that a Stormwater Management Plan be prepared that is consistent with the *New Hampshire Stormwater Manual* (the Manual). The purpose of the Manual is to help ensure that development projects include measures to control peak runoff rates, provide stormwater quality treatment, provide for groundwater recharge and provide for stream channel protection. The Manual includes specific parameters and design criteria for sizing stormwater management practices to meet these objectives. There are four main design criteria that should be addressed on development projects – they are: Peak Runoff Control, Channel Protection, Groundwater Recharge and Stormwater Treatment. Because the subject project is not proposing any measurable increase in impervious surface area onsite, the first three criteria do not apply. However, the requirement for stormwater treatment does apply and should be properly addressed.

In the current submission, the applicant is stating that “the project is not required to provide the stormwater pre-treatment or treatment requested, per the (Manual)” – refer to item #4 in the Horizons September Letter. Their justification is that the project meets the criteria under NHDES “General Permit by Rule” and therefore does not need an NHDES Alteration of Terrain (AoT) Permit. However, this justification mistakenly conflates the AoT Permit requirements with the requirement to meet the stormwater treatment criteria outlined in the Manual. When, in fact, these are two separate and distinct requirements. We acknowledge and agree that the project does qualify as meeting the NHDES General Permit by Rule and that it is not subject to an individual AoT Permit. However, that does not preclude the project from needing to meet the requirements of the Town of Effingham Zoning Ordinance, which specifically require that the stormwater management plan conform to the Manual. In addition, the Manual specifically recommends that “all development projects” adhere to its design parameters, and not just those projects that require an AoT permit. In adopting a reference to the Manual in the Zoning Ordinance, the Town is clearly expecting that all development projects within the Groundwater Protection District comply with the stormwater requirements set forth in the Manual, which include the requirement for stormwater treatment.

We recommend that the applicant revise the Stormwater Management Plan and Drainage Report to comply with the stormwater treatment criteria outlined in the Manual. In addition, the following comments include several specific thoughts and recommendations related to the stormwater management design and compliance with the Stormwater Manual.

3. The plans, as currently designed, contain deep sump catch basins and an oil/water separator. Both of these are identified as “pre-treatment” devices in the Manual and are

suitable for use on this site. They are intended to provide pre-treatment of the stormwater runoff prior to entering a treatment practice and will serve to capture coarse sediments, floating debris and some hydrocarbons. However, the combination of these devices does not meet the design criteria outlined in the manual for treatment. In order to receive proper stormwater treatment, an additional stormwater structure will need to be implemented downstream from these devices. A common practice would be to utilize a lined filtration BMP, which would need to meet the design criteria contained in the Manual for the contributing Water Quality Volume (WQV) or Water Quality Flow (WQF) and would need to take into consideration the requirements associated with a groundwater protection area and a high load use.

4. As currently designed, the project is proposing to utilize infiltration as one component of the stormwater management system. The Stormwater Manual specifically prohibits infiltration into a groundwater protection area where the stormwater is from a high-load area and from areas where gasoline is dispensed from vehicles. The exception would be for any roof runoff that can be isolated from the pavement surface runoff. The project is currently proposing an infiltration trench that receives runoff from the proposed canopy only – this is acceptable. However, runoff from the paved surfaces that is captured by the catch basins should be properly treated prior to discharge and should not include any infiltration component. The design plans currently include a shallow, surface drainage basin that is proposing to infiltrate stormwater runoff from the paved parking area, including the fueling area. This is not acceptable. We would recommend that the project utilize a different BMP, such as a bioretention basin or a filter basin that contain an impermeable liner to ensure that runoff from the high load area is not infiltrated into the groundwater.
5. The Stormwater Manual recommends that “high load areas,” such as gas stations, implement a “Source Control Plan,” which should be developed to minimize the volume of stormwater coming into contact with regulated substances and to segregate relatively clean stormwater from stormwater with a potentially higher concentration of pollutants. This project has prepared an SPCC Plan, which is similar to a Source Control Plan and covers many of the same items. However, there are a few additional aspects of the Source Control Plan that should be addressed - and could likely be accomplished by supplementing the SPCC Plan. We recommend that the applicant review the Source Control Section of the Stormwater Manual make any necessary adjustments to the SPCC Plan and/or prepare a separate Source Control Plan.
6. As currently designed, the shallow, surface drainage basin is located off the pavement between Catch Basin 1 and the NHDOT right-of-way at the southeast corner of the site. It is documented in the drainage report as Pond P-5 and it currently includes an infiltration component as well as an overflow into the DOT right-of-way. We have several comments on the design of this basin:
 - a. If this basin is intended to be utilized for treatment it should be properly designed to meet the criteria contained in the Manual and it should include a BMP that is suitable for use in a high load area (i.e. not infiltration).

- b. It is unclear on the plans how the proposed grading of this basin will be accomplished as there appear to be vertical conflicts between the proposed contour elevations and that proposed elevations of the catch basins. For example, Catch Basin 1 has a rim elevation of 423.50 and is backed by a 5" high sloped granite curb. Immediately behind the curb is a proposed contour elevation of 422.00. The grading design should be checked in this area to ensure that it is constructible.
 - c. The proposed grades shown on the plan do not match the elevations identified in the Drainage Report. This should be revised or clarified accordingly.
 - d. The Report identifies surface areas of the basin that appear to be significantly larger than what is shown on the plans. This should be revised or clarified accordingly.
 - e. The elevation of the emergency spillway should be identified on the plan and a typical construction detail should be provided.
7. The Drainage Report includes a Drainage Plan exhibit that illustrates the drainage (or subcatchment) areas of the proposed catch basins. However, it is not clear on the grading plan how the stormwater runoff will actually drain to the catch basins. Specifically, it appears that the majority of drainage area S-1 will actually drain down the driveway towards Leavitt Road and not towards Catch Basin 1 as intended. There is not sufficient detail on the grading plan to ensure that stormwater runoff is directed towards the catch basins. Furthermore, it is still not clear on the plans the extent to which the existing pavement onsite will need to be regraded in order to accommodate the desired drainage patterns. Since the primary purpose of the Stormwater Management Plan, Drainage Report and Inspection and Maintenance Manual are to ensure that the stormwater runoff from this front portion of the site is appropriately managed, treated and maintained, it is critical that the front paved area of the site be graded in a manner that will guarantee the stormwater runoff drains to the catch basins where it can be properly intercepted before flowing offsite. We recommend that the engineer revise/clarify the grading design accordingly to ensure that all stormwater runoff from the fuel dispensing areas is directed to the onsite stormwater management system and to identify the limits of new pavement/grading within the subject area of the site.
8. We recommend that the engineer recheck the following design details on the Stormwater Management Plan:
 - a. Catch Basin 2 outlet pipe invert (420.80) does not match the 12" culvert label (418.80).
 - b. Catch Basin 2 appears to have two conflicting pipe connections – the 12" inlet pipe from Catch Basin 1 and the 12" outlet pipe.

- c. There is a proposed contour (elev. 424) shown in close proximity to Catch Basin 2 which has a rim elevation of 423.50.
 - d. Additional spot elevations should be considered along the proposed curb line to ensure proper slopes and drainage towards the catch basins to avoid puddles.
 - e. Similarly, additional spot elevations should be added between the fueling area and the parking spaces adjacent to the building, along with flow arrows.
 - f. We note that the Concrete Pad Grading Plan on sheet SMP 1.02 does not contain any additional information from what is shown on sheet SMP 1.01 other than some drainage flow arrows. Was there some other design information intended on this detail that was not plotted?
9. Is there a reason why only Catch Basin 2 is equipped with a hood? Typically, hoods are most effective when installed on offline basins. Catch Basins 1 and 2 are the only true, offline, deep sump catch basin in the design. Installing hoods on those two catch basins would be an easy way to provide additional pretreatment measures.
10. Is there a reason why the dumpster is being installed on porous pavers? It would seem that a dumpster pad could be a potential source of groundwater contamination and should be installed on an impervious surface. The dumpster is not located in an area that will surface drain to the catch basins, therefore, it may be prudent to install an impervious concrete pad equipped with PLBs to help ensure that any small spills at the dumpster are captured. We recommend that the dumpster be addressed in the Source Control Plan or SPCC Plan.

In addition, we recommend that the project narrative discuss what material will be disposed of in the dumpster, with attention paid to Performance Standard 2210.A.6 which states that outdoor storage areas for regulated substances, including waste, must be located outside the sanitary protective radius of wells used by public water systems. We note that the proposed dumpster is located within the protective radius of the existing onsite well. If that dumpster will contain any waste from petroleum products or regulated substances than it may need to be moved to a different location on the site that is outside the protective radius.

11. The Stormwater Management Details plan contains a Concrete Pad Grading Plan detail. It is not clear on that plan how the grading works between the fuel pumps and the existing building and whether or not that paved area can drain to the catch basins. We recommend expanding the grading detail plan to show additional existing and proposed spot grades and flow arrows throughout the entire portion of the site that will drain to the proposed catch basins, to ensure that there is adequate positive drainage.
12. The Existing Conditions Plan should include the stamp of the certified wetlands scientist who performed the wetland delineation on the parcel and/or a separate letter/plan should be provided containing the stamp.

13. We recommend that snow storage areas be shown on the plans and discussed in the narrative/report as they can have an impact on the functionality of the stormwater basins.
14. We note that the plans indicate a 20' right-of-way easement along the southern boundary that benefit the existing overhead utilities, and that the proposed stormwater infrastructure, including the surface basin, are located within this easement. The applicant will need to ensure that the proposed improvements are allowed with this easement area and obtain a joint use agreement with the easement holder if necessary. In addition, the plans note that an existing utility pole may need to be relocated in order to construct the surface basin. There does not appear to be a lot of space in that corner of the site and utility companies typically require that poles be installed 6' to 8' away from driveway entrances and parking areas. We recommend that the applicant consult with the owning utility company to determine a feasible location for the pole relocation prior to finalizing any final stormwater treatment design, in order to avoid any potential re-designs after the fact.
15. The plans have been revised to eliminate drainage structures from within the DOT right-of-way and we understand that the applicant intends to continue to coordinate with DOT on the project. It does appear as though some temporary impacts may be necessary within the DOT right-of-way to install the oil-water separator and possible other features of the stormwater management plan. We recommend that the applicant provide the Town with any final approvals received from NHDOT.
16. We have the following comments specific to the Drainage Report:
 - a. The Report states that the combination of the deep sump catch basin and oil/water separator will "remove any hydrocarbons in the runoff." As discussed above, the combination of these pre-treatment devices will capture some hydrocarbons but they do not meet the design criteria for treatment and they will not remove all hydrocarbons. A permanent treatment method should be incorporated into the design, taking into consideration the additional design criteria of a high load area and a location within a groundwater protection area. All added provisions in the design should be documented in the Report.
 - b. The Report includes field infiltration testing results that demonstrate measured infiltration rates of 1.0 and 2.6 in/hr. Typically, a factor of safety would be applied to the measured rates and then utilized as the design infiltration rate. The drainage calculations utilize design infiltration rates of 3.0 and 2.8 in/hr. The design infiltration rate should be revised and/or clarified accordingly.
17. We offer the following comments on the I&M Manual:
 - a. We recommend that the Owner's contact information be included within the I&M Manual.

- b. The I&M Manual refers to an “attached Location Plan” that shows the device locations – this Plan appears to be missing. We recommend that the I&M Manual contain a plan exhibit (8 ½” x 11” or 11” x 17” would be adequate) that identifies the locations of each Stormwater BMP onsite that is subject to routine inspections along with snow storage areas.
 - c. The I&M Manual should address the need for sweeping / sediment removal from paved surface areas.
 - d. The summary table in the I&M Manual lists five separate stormwater structural devices but inspection forms are only provided for three. The I&M Manual should include inspection forms for all devices or should otherwise specify how each are to be inspected and maintained.
 - e. The I&M Manual should discuss de-icing and snow storage procedures and should include a de-icing log.
 - f. The I&M Manual should be updated to include any additional BMPs added to the stormwater management design as part of the plan revisions.
18. The SPCC Plan should be updated to align with any changes that are made to the stormwater management design. Also, the date on the cover page should match the date on the document.
19. The Planning Board may want to consider that the I&M Manual be a recorded instrument, in accordance with the apparent intent of the Ordinance which states in Section 2208.J that “a narrative description of maintenance requirements for structures required to comply with Performance Standards of Section 2210, Performance Standards, shall be recorded at the Carroll County Registry of Deeds so as to run with the land on which such structures are located. The description so prepared shall comply with the requirements of RSA 478:4-a.”

Please note that we are aware that this project is on the October Planning Board agenda and we are available to further communicate with the Engineer by telephone or email if they wish to discuss any of these comments directly with us. We will supply the Planning Board with a record of any direct communication that we have with the Engineer.

This completes our third review of the submitted items. If you have any questions, please feel free to reach out to me directly.

Sincerely,



Jeffrey W. Lewis, PE
Principal Engineer
Northpoint Engineering, LLC