

CLA Engineers, Inc.

Civil • Structural • Survey

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May 17, 2022

Ms. Maureen FitzGerald
Environmental Planner
Town of Waterford
15 Rope Ferry Road
Waterford, CT 06385



Re: 934,940 Hartford Turnpike

Application Review Comments:

The following responses address the review comments received from Maureen FitzGerald on May 3, 2022.

1. The final plan requires the signature of the wetland /soil scientist and indicate wetland soil types.
Bob Russo's signature will be provided on the final plan, a signature block has been added to the cover sheet. Soils types have been added to sheet 8.
2. The site plans should include a full map of the 2 parcels showing their property boundaries.
Sheet 8 has been added to the set and shows the full property.
3. More detail for slope stabilization and construction grading at the north end of Building A should be included in the plan. The fill from Rte 85 appears relatively unconsolidated and measures to temporarily stabilize the cut slope may be required to avoid slumping and erosion.
Sheet 3 has been revised to show more detailed grading and stabilization measures.
4. Will machinery access for the OHW be kept open during construction? If so, the plan should identify E&S control measures to control erosion of this access due to machinery and sediment movement towards wetlands.
Notes have been added to sheets 2 and 3 to address how access for Eversource will be provided during construction.
5. The construction access pad should extend to paved apron and be a minimum of 50 ft length.
Sheet 2 has been revised to show an appropriate construction access pad.
6. The ESC narrative needs more detail in accordance with Section 25 of the Town regulations. Include the proposed start and stop dates, the duration of anticipated construction, the timing / phasing of construction activity and other elements.
The ESC narrative on sheet 5 has been revised to show anticipated construction start and stop dates.

7. The plan should include proposed soil stockpile areas.
Sheet 2 has been revised to show temporary stockpile areas.
8. The stormwater control narrative should address the timing and methods for conversion of the temporary sediment traps into the permanent stormwater treatment pond and stabilization of exposed soils prior to vegetation establishment.
The ESC narrative on sheet 5 has been revised to address the conversion timing.
9. An inspection & maintenance access to the stormwater pond should be shown.
Sheet 3 has been revised to show an access drive and a gate in the chain link fence.
10. Application should clarify if there is an oil/water separator in the stormwater on the plan as stated in the stormwater O & M narrative.
There is no oil/water separator proposed and the narratives have been revised to reflect this.
11. Stormwater O & M narrative needs to include inspection and maintenance requirements for basin bottom and side slopes, mowing frequency, level spreader and outlet maintenance, invasive plant species controls and forebay inspection / maintenance practices.
The narratives have been revised on sheet 5.
12. The stormwater pond will be excavated 4 to 6 ft. below surface grade and according to the 2 test pits, will encounter seasonal groundwater at contour 100. It is anticipated that there will be a seasonal wet pond 3 to 4 ft. deep in the basin. Address how this affects dry storage volumes in the final basin design and ponded elevations during storm events and frozen conditions.
The Manual recommends that stormwater pond have 3 to 6 feet of seasonal ponded water. This volume can be used for the WQV, however, I am conservative in that I do not include this volume. I do not include the volume below elevation 100 in either the WQV or the capacity of the basin in a storm event. In the hydrology calculations for storm events, the basin has been modeled to have the bottom of the basin at elevation 100. The seasonal wet pond volume has not been included in any of the calculations. As another conservative factor, the basin is also modelled to not include infiltration rates, this covers winter conditions when the ground may be frozen.
13. A basin cross section indicating the capacity of the basin to provide storage for the water quality volume and the proposed detention volumes post-construction should be included. A low flow outlet may be needed to return storm detention capacity to the stormwater pond.
Sheet 7 provides a basin cross section. Our opinion is that a low flow outlet is not needed as the existing soils provide for a high infiltration rate and the topsoil specified also promotes infiltration. An equalizer pipe has been added between the forebay and the stormwater basin to get more flow to the stormwater basin between storms. This will allow for more infiltration between storm events and more treatment.
14. Plan needs to address how off-site run-off into the drainage area is controlled during- and post-construction.
A permanent vegetative swale has been added on sheet 2 and 3, to run along the easterly property line to prevent off-site runoff from entering the site. The runoff from the neighboring property is not significant. A permanent swale detail has been added to sheet 5.
15. Consider increasing the depth of the basin soil media and the percent organic content to provide bio-retention capability in the media as well as adequate rooting depth.
The topsoil has been increased to 12 inches, on sheet 7.

16. Identify roof material type and location of proposed roof drains. If metal roof material is proposed, the stormwater treatment train should address attenuation of zinc and copper prior to discharge towards Jordan Brook.
Metal roof is proposed, the stormwater basin has already been designed to maximize the attenuation of metals such as zinc and copper. Section 11- P2 of the CTDEEP 2004 Stormwater Manual indicates that the type of treatment provided (a stormwater wetland) provides the highest level of removal, termed "significant benefit" in that document. Also, there will be no discharge from the basin to Jordan Brook, even in the 100 year event, thus residence time in the basin and uptake by plants and adsorption to soil particles will be maximized.
17. Can shade plantings be incorporated in the area of the stormwater basin and outlet to assist in mitigation of thermal impacts prior to discharge towards Jordan Brook?
There is no discharge to Jordan Brook, even in the 100 year event, thus treated water will eventually reach Jordan brook via shallow subsurface flow, where the water will be cooled to ground temperature. No thermal impacts are anticipated.
18. What are the anticipated pollutant loading and removal rates of the site development and stormwater treatment system? The watershed management plan recommends no net increase in pollutant loading for this significant wetland area.
The University of New Hampshire's Stormwater Center in Durham New Hampshire indicates that typical Phosphorus load export rate from this type of development (commercial/industrial) will be 1.78 lbs/acre/year. For Nitrogen that value will be 15 lbs/acre/year.
(https://www.unh.edu/unhsc/sites/default/files/media/ms4_permit_nomographs_sheet_final_2020.pdf) The University of New Hampshire's research reveals that efficiency removal for typical pollutants of concern such as TSS, N, P, and zinc is directly tied to the volume of stormwater that is held and infiltrated. This holds for BMPs such as infiltration, stormwater wetlands and wet stormwater ponds. The research reveals that if a 2 inch depth of runoff from a site's impervious surface is held and infiltrated by a given BMP, the reduction in these pollutants is 99-100%. On this site, the fore bay alone will hold and infiltrate 2 inches of storm water runoff from the entire site (not just the impervious surfaces). The rest of the basin, which is larger than the fore bay, will provide an even greater level of pollutant removal. Thus, CLA believes that pollutant removal rates for pollutants of concern will be greater than 99% and there will be no increase in releases of pollutants to Jordan Brook.
19. The findings and recommendations from CT DEEP NDDDB should be included for protection of the identified species of concern. Will exclusionary fencing also be required along the southern P/L abutting the transmission line corridor?
The recommendations from CT DEEP NDDDB have been shown on sheet 2. A silt fence has been shown along the westerly, southern, and northern limits of clearing, which will function as an exclusionary fence. Where wood chips are backed by silt fence, the wood chips are on the inside of the construction area, so the species can use the wood chips to climb out, but not into the construction area.

The following comments from the Conservation Commission meeting on May 12, 2022 have been addressed as follows:

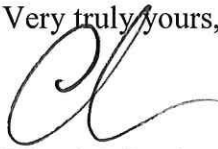
1. Provide a copy of the NDDP Determination letter.
A copy of the letter is attached to this memo.
2. Provide additional dates and the overall construction duration to the E & S Narrative

Additional dates and an overall construction time of one year, has been added to the Narrative on sheet 5.

3. Add an Oil/Water separator.
An Oil /Water Separator has been added between the last catch basin and the forebay, on sheet 3. A detail has been added to sheet 6.
4. Provide TR-55 modelling for the project.
An Addendum to the Drainage Report has been provided, modelling the project utilizing TR-55.

If you have any questions please do not hesitate to contact me.

Very truly yours,

A handwritten signature in black ink, appearing to be 'Ellen M. Bartlett', written over the typed name.

Ellen M. Bartlett, PE, CPSWQ
LEED Accredited Professional