

Andrews Survey & Engineering, Inc.

Land Surveying • Civil Engineering • Site Planning

September 23, 2019
Revised October 30, 2019

Norfolk Zoning Board of Appeals
Mr. Christopher Wider, Chairman
One Liberty Lane
Norfolk, MA 02056

Re: *Peer Review Comment Responses*
Lakeland Hills – Comprehensive Permit
Seekonk Street, Norfolk, MA
ASE Project #2015-219

Dear Members of the Board:

Andrews Survey & Engineering, Inc. (“ASE”) has received comments submitted to your office by Tetra Tech, dated August 26, 2019 from their review of the above referenced project. The promptness of their review is appreciated. Original responses by ASE have remained and shown *italicized*. ASE responses to peer review comments have been provided in **bold** font below. The comment numbering has been maintained.

General Comments

- A. No information has been provided indicating how the “shared leach field” locations have been sized or how their locations were determined. The wastewater treatment and disposal system may fundamentally impact the proposed density and we recommend the applicant provide additional documentation demonstrating a reasonable level of certainty that the site can support the proposed density from a wastewater disposal and stormwater management perspective before addressing what we consider fine design comments. Please include: Summary of design flows, test pit data indicating underlying soils conditions, conceptual layout and description of treatment plant component and required tankage, and conceptual layout and detail of subsurface soil absorption system (SAS) and sizing calculations.

Additional information, including preliminary sizing calculations, for the subsurface sewage disposal systems will be provided on a future revision. Additional soil testing has been scheduled on site and the results of the testing will be provided.

Preliminary sizing has been provided based on the soil data obtained on site and a conceptual layout provided on the revised plans. A single location has been proposed for the Wastewater Treatment Plant (WWTP) and extensive soil testing/borings have been performed and the data provided. The anticipated system component and leach field have been sized utilizing 25,000 GPD and a 5 MPI percolation rate based on the underlying soil conditions.

- B. Stormwater Management System considering pre and post conditions. The design assumes a restrictive underlying soil condition when evaluating pre-development condition but applies a far more permeable condition under proposed conditions. The net effect is that the pre- development runoff rates are over-estimated and post development rates under-estimated. We recommend the applicant address these issues prior to conducting any future analysis or plan modifications.

Additional soil testing has been scheduled on site to verify soil conditions and the results of the testing will be provided. The discrepancy of the mapped soil classification versus the observed soil conditions found on site will be rectified in a future stormwater analysis.

On any future stormwater management system, the pre-development and post-development conditions will be analyzed using Hydrologic Soil Group A (HSG A) which is representative of the underlying soils observed on site. Preliminary analysis has been performed in order to design the new layout and approximate infiltration basin sizing.

Project Plans

1. Test pit information is provided on the Existing Conditions Plan but does not include the date of performance or the name of the individual inspector and his/her related qualifications. Future plans should include such information. Test pits were advanced to a reasonable depth to document surficial soils but were not advanced to refusal as needed to document the transmissivity beneath the proposed soil absorption system. Any future investigation should be advanced to refusal if needed to support groundwater mounding calculations.

Additional soil testing has been scheduled on site to verify on site soil conditions and the results of the testing will be provided, including testing date and the name of the licensed soil evaluator.

The results of the soil testing have been provided on sheet C-3.1 of the revised plan set. In addition, the soil logs have been provided, including testing date and the name of the licensed soil evaluator.

2. In some cases, test pit results indicate mottles were not observed despite being at depths several feet lower than adjacent wetlands. This suggests that the absence of soil mottles may not provide a reliable representation of estimated seasonal high groundwater. We recommend monitoring wells be installed in at least those locations where groundwater is likely to affect design.

Additional soil testing has been scheduled on site to verify soil conditions and the results of the testing will be provided. Estimated seasonal high groundwater will be determined at each test pit location and monitoring pipes will be left for future monitoring.

The results of the soil testing have been provided on sheet C-3.1 of the revised plan set. Monitoring wells were installed as requested at locations of the test pits to provide ongoing monitoring of groundwater.

3. It appears that a tiny bit of the work at the entrance from Seekonk Street may extend onto adjacent private property. This likely can be addressed easily in future submittals.

All proposed work will occur on the subject property and the plans will be revised accordingly.

As the detail of the design plan progresses, no work will be shown extending onto adjacent properties.

4. We recommend the proposed retaining wall near the Seekonk Street entrance be relocated to fall outside the proposed right of way if possible.

The grading and location of the wall will be evaluated to look at the possible relocation of the wall outside of the right of way.

As the detail of the current design plan progresses, the grading and location of the wall will be evaluated to look at the possible relocation of the wall outside of the right of way.

5. The Project should provide at least 20' between proposed buildings and the limit of the right-of-way at all driveways to ensure parked vehicles do not extend into public way.

Unit locations will be revised to ensure there is adequate space within all driveways for parked vehicles that do not extend into the public way.

A minimum of 20' spacing between proposed buildings and the limit of the right-of-way has been provided on the revised layout.

6. We understand the anticipated "traffic calming" benefits of the traffic island but suggest the ZBA discuss potential options that may provide a less complicated traffic pattern and create less impervious surface.

It is understood that potential traffic impacts from the project are being reviewed by the Boards' consultant, including the traffic island. Every reasonable effort will be made to reduce the amount of impervious surfaces throughout the project.

The previously shown traffic calming island has been removed from its previous location. A traditional intersection has been provided in place of the traffic island. A roundabout has now been incorporated that will accommodate a bus shelter and parking spaces and will also allow bus maneuverability without disrupting traffic flow patterns.

7. We recommend the crosswalk at Unit 94 be moved to consolidate with crossing at Unit 93.

Crosswalk locations will be consolidated and placed at intersections in future submissions.

The 84 unit layout differs from the original design and the comment is no longer applicable, however proposed crosswalks have been placed at locations as to not interfere with driveways.

8. The plans do not indicate center line pavement markings. Will roadway centerlines be striped?

If required, centerline striping will be depicted in future submissions.

If required, centerline striping will be depicted in future submissions.

9. Please consider adding centerline stationing to the layout and materials plan on future submittals.

Centerline stationing will be added to future submissions on the layout and material plans.

Centerline stationing has been added to the Layout & Materials sheets of the revised plan.

10. Show conceptual locations of treatment plant components and tankage as well as required accommodations for access and maintenance. Our concern is that these items may not have been adequately considered and accommodating actual requirements will impact unit or roadway layout.

Conceptual treatment plant components will be shown on any future submittals.

Conceptual treatment plant components have been added to sheet C-4.3 of the revised plan. The sizing of the system and system components were based on 25,000 GPD.

11. Proposed roadway locations are appropriately configured to minimize impacts at wetland crossings. Areas of wetland likely impacted by roadway construction are depicted accurately and appear to be comfortably below the 5,000 s.f. local permitting threshold.

No response required.

No response required.

12. The Project proposes connection to an existing water main in Seekonk Street. We request the applicant provide documentation to assist the ZBA in finding that adequate supply is available and that the new demands of the Project can be safely accommodated. At a minimum the information should include a recent fire flow test of the main in Seekonk Street, a projected peak demand from the development and an assessment of available supply and pressure as well as a description of proposed connection methods and valve locations.

Hydrant flow testing was conducted on May 18, 2018 and the results have been provided to the Norfolk ZBA. In addition, an assessment of the anticipated water system usage has been provided by Environmental Partners, dated September 12, 2019.

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13. The proposed layout of drainage infrastructure near the Site entrance is confusing. Please review and simplify if possible.

The drainage design at Seekonk Street will be evaluated to find an alternative solution for mitigating stormwater runoff.

The preliminary 84 unit drainage design shows the use of roadside swales in lieu of traditional catch basins. The drainage system will be simplified to the maximum extent as the detail of the design plan progresses.

14. Infiltration Basin 1 does not include an emergency overflow. If capacity is exceeded the basin will spill directly to Seekonk Street.

Basin 1 is designed to attenuate a 100-year storm, thus there is not an emergency overflow. The drainage design at Seekonk Street will be evaluated to find an alternative solution for mitigating stormwater runoff.

Based on preliminary analysis, basin 1 will be designed to infiltrate all storm events and no discharge from the basin towards Seekonk Street is expected. To ensure this happens, a higher rainfall event may be analyzed to demonstrate the functionality of the basin.

15. Please explain how Infiltration Basin 2 will not be short circuited by its outlet to Infiltration Basin 1.

The drainage design at Seekonk Street and specifically infiltration basin 1 and 2 will be evaluated to find an alternative solution for mitigating stormwater runoff.

The configuration and routing between Basin 1 and Basin 2 will be analyzed to demonstrate that Basin 2 will not be short circuited on final stormwater management design.

16. The drainage design appears to include adequate consideration of off-site flows. Please confirm that proposed basin design includes consideration of off-site flows or otherwise is intended to redirect offsite flows around proposed basin.

The drainage analysis has accounted for all off-site flows coming into the project site.

The drainage analysis has accounted for all off-site flows coming into the project site.

17. A large amount of earthwork, including ledge removal, is proposed. Please provide a summary of required Cuts and Fills and a brief explanation of how bulk excavation will be executed.

A general cut/fill analysis will be provided on any future submissions.

Preliminary cut/fill analysis was done on the current 84 unit design and determined to have net cut of approximately 75,000 cubic yards.

18. As the Project advances we may request the grading and drainage plan utilize 1-foot contour intervals considering the proximity of units. For now, 2-foot contour intervals are reasonable particularly given the extent of grading required. The applicant should plan on providing 1-foot contour intervals on the Final Plans.

Additional grading, including 1-foot contours will be provided on grading and drainage sheets on final plan submission.

Additional grading, including 1-foot contours will be provided on grading and drainage sheets on final plan submission.

19. The two leaching fields are proposed in significant cut and fill sections. This will likely complicate design and reinforces why additional information is required to document the suitability of each location.

Additional soil testing has been scheduled on site to verify soil conditions and the suitability of the locations of the two (2) leaching fields.

A single location has been proposed for the Wastewater Treatment Plant (WWTP) and extensive soil testing/borings have been performed and the data provided.

20. The proposed sewer routing indicates 19 units will be connected to the north leach field and 77 units will be connected to the south leach field. However, the south leach field is significantly smaller in footprint. Are portions of the site planning on utilizing a Title 5 system while other portions will be served by a treatment plant? The estimated combined flow from the project is well over 20,000 gallons per day suggesting a treatment plant is required.

It is anticipated the leaching field closest to the traffic circle will be a temporary Title V system to be utilized for the first phase of buildout and the location furthest from the site entrance will be the final location of the wastewater treatment plant.

A single location has been proposed for the Wastewater Treatment Plant (WWTP) and extensive soil testing/borings have been performed and the data provided. The previously shown northern leaching system has been eliminated and the southern location has been designated as the WWTP location.

21. The outlet from Infiltration Basin 6 discharges at a point source immediately upgradient of an abutting property which previously was exposed to overland flow only. The discharge will need to be modified to re-establish a distributed flow pattern that will not modify drainage on abutting properties.

The discharge point at Infiltration Basin 6 will be revised to avoid a point source discharge upgradient of abutting property.

Based upon preliminary analysis, it is anticipated that the infiltration basins will be designed to infiltrate all storm events and will avoid point source discharges towards abutting properties.

22. Several infiltration basins are located within 50-feet of a wetland. Please explain how these basins comply with minimum 50-foot setback requirements of the Massachusetts Stormwater Handbook.

After discussing directly with MassDEP, any portion of the infiltration basins that provide exfiltration are required to maintain a 50-foot setback to a Bordering Vegetated Wetland. The project will be designed in compliance with MassDEP requirements.

The infiltration basins have been relocated to be outside of the required 50-foot setback to a Bordering Vegetated Wetland.

23. Infiltration Basin 5 has a bottom elevation of 192.00 while the adjacent wetland is at elevation 194.00. Please explain how this basin is expected to function and maintain separation from groundwater.

Additional soil testing has been scheduled on site to verify on site soil conditions and the results of the testing will be provided. Estimated seasonal high groundwater will be determined at each test pit location and monitoring pipes will be left for future monitoring. The required groundwater separation will be maintained on future stormwater designs.

The infiltration basin mentioned has been eliminated and the comment is no longer applicable.

24. When breaking the elevation grid of the profile please make sure to indicate elevation ranges on both sides of the break and clearly demarcate the sections.

Future plan submissions will be revised to clearly demarcate elevation ranges on profiles.

Future plan submissions will be revised to clearly demarcate elevation ranges on profiles.

25. Please provide titles for stationing to distinguish common station references. Or consider providing non-recurring stationing by beginning at varying starting points (ie. Station 00+00, Station 30+00, Sta 60+00).

Titles of profiles will be revised to include station ranges on future submissions.

Titles of profiles will be revised to include station ranges on future submissions.

26. Easements will need to be defined for any areas on private property where operation and maintenance is required.

Easements will be shown on final design submission when utility and stormwater layouts are finalized.

Easements will be shown on final design submission when utility and stormwater layouts are finalized.

27. The Project should include provisions (ie. planting or fence) to prevent impacts of headlight glare on residential property opposite the proposed driveway.

Upon final project design, landscaping plans will be provided for the project and specifically at the entrance from Seekonk Street.

Upon final project design, landscaping plans will be provided for the project and specifically at the entrance from Seekonk Street.

28. Please provide a figure showing how Norfolk Fire Department emergency vehicles will access the site, and particularly Units 16 and 17. We recommend access be coordinated with the Norfolk Fire Chief.

Upon final project design, a turning radius plan will be provided to the Norfolk Fire Department for review.

Turning movements have been analyzed on the 84 unit layout and Turning Movement Plan will be provided on a future submittal.

29. Given the density of development we recommend roadway sections include an additional 1" of pavement thickness.

Additional pavement thickness will be provided on any future submission.

Additional pavement thickness will be provided on any future submission.

Stormwater Report/Drainage Design

30. The analysis shows an increase in peak runoff to Seekonk Street during the 2-year event. This does not comply with Standard 2. Please address in future submittals.

Stormwater analysis will be evaluated to not increase peak runoff to Seekonk Street during the 2-year event.

Stormwater analysis will be evaluated to not increase peak runoff to Seekonk Street during the 2-year event.

31. The runoff analysis appears to use far more restrictive NRCS soil mapping to estimate runoff volumes under pre-development conditions and uses far less restrictive test pit results for pond infiltration rates. Please ensure that the same soil condition assumptions are used under all pre- and post-development applications.

Additional soil testing has been scheduled on site to verify on site soil conditions and the results of the testing will be provided. The discrepancy of the mapped soil classification versus the observed soil conditions found on site will be rectified in a future stormwater analysis.

On any future stormwater management system, the pre-development and post-development conditions will be analyzed using Hydrologic Soil Group A (HSG A) which is representative of the underlying soils observed on site. In addition, the soil logs have been provided, including testing date and the name of the licensed soil evaluator.

32. Pre-development Analysis Point 5 consolidates flow from SC5A and SC5B but those subcatchments discharge at different locations and never reach a point of confluence. Please address separately in future analysis.

Stormwater analysis for pre-development Analysis Point 5 will be revised accordingly.

Stormwater analysis for pre-development Analysis Point 5 will be revised accordingly.

33. The analysis uses extremely high infiltration rates for ponds despite soil mapping and topographical conditions that suggest more restrictive conditions. Please provide additional information supporting the use of the Rawls Rates applied in the analysis. At a minimum this should include detailed test pit logs which include the date conducted, the name and license number of the Soil Evaluator conducting the testing and the name of any witness to the test.

Additional soil testing has been scheduled on site to verify soil conditions and the results of the testing will be provided, including testing date and the name of the licensed soil evaluator.

On any future stormwater management system, the pre-development and post-development conditions will be analyzed using Hydrologic Soil Group A (HSG A) which is representative of the underlying soils observed on site. In addition, the soil logs have been provided, including testing date and the name of the licensed soil evaluator.

34. Please clarify how the Hydrologic Soil Groups considered under the Stormwater Recharge Requirements (Standard 3) can stipulate that “No A Soils were found on site” yet every basin uses a Rawls Rate corresponding to an A soil.

Additional soil testing has been scheduled on site to verify soil conditions and the results of the testing will be provided, including testing date and the name of the licensed soil evaluator.

On any future stormwater management system, the pre-development and post-development conditions will be analyzed using Hydrologic Soil Group A (HSG A) which is representative of the underlying soils observed on site. In addition, the soil logs have been provided, including testing date and the name of the licensed soil evaluator.

35. Analysis submitted includes exfiltration over “Wetted Area”. Guidance in the Stormwater Handbook requires infiltration be calculated over “Surface Area”. Please address in future analysis.

Future stormwater analysis will utilize the ‘Surface Area’ as opposed to ‘Wetted Area’.

Future stormwater analysis will utilize the ‘Surface Area’ as opposed to ‘Wetted Area’.

36. It appears the analysis takes credit for exfiltration in sediment forebays. While not specifically precluded under applicable guidance, forebays are required “pre-treatment” for infiltration systems and are designed to hold contaminants and provide for maintenance that typically hinders infiltration. We recommend the design not include the forebay area in the exfiltration calculation.

Future stormwater analysis will remove the forebay area in the exfiltration calculations.

Future stormwater analysis will remove the forebay area in the exfiltration calculations.

37. Please confirm that the expected volume of the Gabion Wall is excluded from the pond geometry (volume and bottom area) considered in the analysis. The Gabion Wall is shown as a line on the drawings but in application will likely be several feet tall and at least as wide.

Future stormwater designs will account for the height of the Gabion wall or will utilize other means of creating a sediment forebay berm.

Future stormwater designs will account for the height of the Gabion wall or will utilize other means of creating a sediment forebay berm.

38. Please clarify the origin of the 4.21 in/hr infiltration rate used in the drawdown calculations provided for basins 2-6.

The drawdown calculations inadvertently used 4.21 in/hr as opposed to 2.41 in/hr. Future stormwater analysis will utilize the infiltration rate based on the additional soil testing conducted on site.

The drawdown calculations inadvertently used 4.21 in/hr as opposed to 2.41 in/hr. Future stormwater analysis will utilize the infiltration rate based on the additional soil testing conducted on site.

We hope this serves your needs at this time. Should you have any questions or require additional information, please contact this office.

Very truly yours,
ANDREWS SURVEY & ENGINEERING, INC.



Travis R. Brown
Engineering Group Manager

Enclosure(s)

C: Lakeland Hills, LLC
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Tetra Tech