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June 21, 2022

Ms. Jacki Byerley, Planner
Andover Planning Board
Town Office
36 Bartlett Street
Andover, MA 01810

Re: Stormwater Peer Review
Hidden Pines Lane - Four Lot Subdivision
22 William Street, Andover, MA

Dear Ms. Byerley and Board Members:

The Horsley Witten Group, Inc. (HW) is pleased to provide the Andover Planning Board with this letter report summarizing our initial peer review of the stormwater management for the proposed residential development located at 22 William Street, Andover, Massachusetts. Steven & Elizabeth Leed (Applicant) have submitted an application for a proposed four-lot subdivision known as Hidden Pines Lane. The 2.33-acre parcel contains an existing house, two garages, a tennis court, and a pool with a pool house. The Applicant is proposing to construct a 315-foot-long roadway and three new houses, maintaining the existing house. To capture, treat, and manage the stormwater runoff from the proposed roadway, the Applicant is proposing to install a closed drainage system and two subsurface infiltration chamber systems, hydraulically connected, on the south side of the cul-de-sac. The plan set indicates two bordering vegetated wetland (BVW) resource areas to the west and south of the project site.

The following documents, plans, and correspondence were received by HW:

- Letter to Board of Health, regarding Definitive Subdivision Plan for Hidden Pines Lane, prepared by Andover Consultants, Inc., dated February 7, 2022 (1 page);
- Letter to Town Clerk, regarding Definitive Subdivision Plan for Hidden Pines Lane, prepared by Andover Consultants, Inc., dated February 7, 2022 (1 page);
- Cover letter application for a Special Permit to Earth Movement, Hidden Pines Lane Subdivision, prepared by Andover Consultants, Inc., dated February 7, 2022 (1 page);
- Cover letter application for Definitive Subdivision Plan, Hidden Pines Lane, prepared by Andover Consultants, Inc., dated February 7, 2022 (1 page);
- Form C Application for Approval of Definitive Plan, signed by Steven & Elizabeth Leed, dated February 1, 2022 (2 pages);
- Earth Movement Permit, Hidden Pines Lane, Andover, MA, prepared by Andover Consultants, Inc., dated February 1, 2022 (11 pages);
- Stormwater Management Report, Hidden Pines Lane, Andover, Massachusetts, prepared by Andover Consultants, Inc., dated February 1, 2022 (113 pages);
- List of abutters to 22 William Street (2 pages); and

- Definitive Subdivision Plan, Hidden Pines Lane, Andover, Massachusetts, prepared by Andover Consultants, Inc., dated February 1, 2022, which includes:

o Cover Sheet	1 of 7
o Definitive Subdivision Plan	2 of 7
o Existing Conditions & Demo Plan	3 of 7
o Layout & Grading Plan	4 of 7
o Utility Plan	5 of 7
o Plan & Profile	6 of 7
o Site Details	7 of 7

Comments from Residents:

- Abutter comments to Planning Board and Conservation Commission, regarding proposal for subdivision plan on 22 William Street, email from Ayelet Katz and Gideon Kojokaro, dated February 21, 2022, with attachments (13 pages);
- Abutter comments to Planning Board and Conservation Commission, regarding proposal for subdivision plan on 22 William Street, email from Ayelet Katz and Gideon Kojokaro, dated February 22, 2022 (1 page);
- Abutter comments to Planning Board and Conservation Commission, regarding proposal for subdivision plan on 22 William Street, email from Ayelet Katz and Gideon Kojokaro, dated February 23, 2022 (1 page);
- Concerns by Abutters, regarding proposal for subdivision plan on 22 William Street, PowerPoint presentation prepared by Ayelet Katz and Gideon Kojokaro, dated March 1, 2022 (15 slides);
- Abutter comments to Planning Board and Conservation Commission, with 4 Figures and 5-page document attached, regarding development plans and permits for 22 and 24 Williams Street, email from Ayelet Katz and Gideon Kojokaro, dated March 21, 2022; and
- Abutter comments for Planning Board, regarding proposal for subdivision plan on 22 William Street, email from Ayelet Katz, dated April 26, 2022, including letter addressed to Planning Board and Conservation Commission to be provided to Horsley Witten Group, prepared by Ayelet Katz and Gideon Kojokaro (11 pages).

Stormwater Review

HW has reviewed the documents listed above and has the following comments concerning the stormwater management design in accordance with the Massachusetts Stormwater Handbook (MSH) dated February 2008, and the Town of Andover Stormwater Management and Erosion Control Regulations amended May 11, 2021 (Stormwater Regulations).

In accordance with Section VI. B. of the Andover Stormwater Regulations the Stormwater Management Permit and Narrative provided by the Applicant shall contain sufficient information to verify compliance with the local Stormwater Bylaw and the MassDEP Stormwater Management Handbook (MSH). Below are comments relating to the standards as presented in the MSH. Where the more stringent requirements of the Andover Stormwater Regulations are applicable, those comments are included.

1. *Standard 1 states that no new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*

    a. The Applicant has proposed to utilize the existing outlet in the retaining wall located along the south property boundary. The existing 15-inch corrugated metal pipe (CMP) most likely feeds the wetland flagged to the south of the property. The existing and the proposed 15-inch outlet pipe discharge to the southern BVW with no rip rap apron. HW recommends that the Applicant determine whether erosion within this wetland is likely with the proposed stormwater design. HW notes that the stormwater to this existing stormwater conveyance will be treated prior to discharging.

    b. The proposed grading and stormwater management do not include any pipe discharges towards the wetlands off the west property boundary. Under existing and proposed conditions there is an area of vegetation that flows towards the west. This area has been reduced from pre-development conditions by approximately 10,000 square feet (sf). No further action required.

2. *Standard 2 requires that post-development runoff does not exceed pre-development runoff off-site.*

    a. The Applicant has included two drainage areas (EX1 & EX2) under existing conditions. It appears that the watershed boundary between the two areas should extend to a high point noted with a 78-foot contour and a 30-inch tree. HW recommends that the Applicant redraw the border between EX1 and EX2 to pass through this high point or clarify the delineated area. HW also notes that the existing house at 24 William Street is completely within the catchment area noted as EX2. HW suggests that the Applicant clarify how this was determined.

    b. The Applicant has divided the project site into three (3) proposed sub-catchments (DEV1, DEV2, DEV3). As noted above the catchment divide around the existing house at 24 William Street should be clarified.

c. The peak discharge rate at the southern property boundary increases by 0.2 cubic feet per second (cfs) during the 2-year 24-hour storm event. Per the Andover Stormwater Regulations, the post-development peak discharge rate shall be equal to or less than the pre-development peak discharge rate. HW understands that the increased flow is attributed to DEV3 which consists primarily of vegetation that sheet flows towards the southern property boundary. HW recommends that the Applicant consider measures to eliminate the minimal increased flow.

d. The Applicant has used a curve number (CN) of 39 with a description of >75% grass cover area for EX1 and EX2. During the site visit conducted on May 25, 2022, HW observed several large pine trees throughout the property. HW recommends that the Applicant revise the existing curve number value considering the site partially wooded.

e. The Applicant has utilized a woods/grass combination within DEV1 and DEV3, HW recommends that the Applicant clarify the extent of the wooded area under proposed conditions.

f. The Applicant has used a time of concentration (Tc) value of 4.5 minutes for DEV1. Standard engineering practice is to use a minimum Tc value of 6 minutes. The 4.5 value may be considered conservative.

g. HW recommends that the Applicant confirm that the underground stormwater chamber systems can be installed as proposed. HW recommends that the Applicant consider placing the chambers on 6 inches of crushed stone.

h. HW recommends that the Applicant include a detail illustrating the installation of the 4-foot diameter manholes to be installed beneath the chambers, including a means to inspect the manholes from above the chambers.

i. HW recommends that the Applicant provide a detail for the proposed drainage swale. Furthermore, documentation will be necessary to alert the new homeowners that the swale must be maintained and cannot be altered in the future.

j. As required per Section IX.E.6 of the Andover Stormwater Regulations the Applicant has utilized the current precipitation data provided in NOAA Atlas 14. No further action required.

3. *Standard 3 requires that the annual recharge from post-development shall approximate annual recharge from pre-development conditions.*

    a. Test Pit 2 (TP-2) data indicates fill to 6 feet below the surface. HW recommends that the Applicant conduct an additional test pit within the footprint of the proposed chamber system to demonstrate adequate separation to the estimated seasonal high groundwater (ESHGW) per MSH Volume 2 Chapter 2 Page 88 as well as the depth to natural material.

    b. HW recommends that the Applicant note that all fill below the chambers will be removed and replaced with clean material with an infiltration rate of at least 2.41 inches per hour.

    c. It appears that the Applicant has provided adequate recharge by using the subsurface infiltration systems to capture runoff from the post-developed area, specifically DEV2.

4. *Standard 4 requires that the stormwater system be designed to remove 80% Total Suspended Solids (TSS) and to treat 1.0-inch of volume from the impervious area for water quality.*

    a. The Applicant has proposed catch basins, a Stormcepter (STC 900), and subsurface infiltration structures to provide TSS removal. HW recommends that the Applicant provide documentation for the TSS removal rate used for the STC 900.

    b. HW recommends that the Applicant provide supporting calculations for the 60% total phosphorus removal per the Andover Stormwater Regulations.

5. *Standard 5 is related to projects with a Land Use of Higher Potential Pollutant Loads (LUHPPL).*

    A residential site is not considered a LUHPPL, therefore Standard 5 is not applicable.

6. *Standard 6 is related to projects with stormwater discharging into a critical area, a Zone II or an Interim Wellhead Protection Area of a public water supply.*

    The site is not within a critical area, therefore Standard 6 is not applicable.

7. *Standard 7 is related to projects considered Redevelopment.*

    While parts of this property have been previously developed, this proposed project will increase impervious area and is not considered redevelopment. Therefore, Standard 7 does not apply.

8. *Standard 8 requires a plan to control construction related impacts including erosion, sedimentation or other pollutant sources.*

    a. The Applicant has included “Recommended Construction Period Pollution Prevention and Control” in the Stormwater Report and details for various erosion control measures on Sheet 7 of the plan set. It appears that the erosion control measures shown in the plans are proposed hay bales on Sheets 4, 5, & 6 placed along the west and south property boundaries. HW recommends that the Applicant provide an additional sheet for the Erosion and Sediment Control Plan in the plan set to clearly delineate all proposed erosion control practices.

    b. Projects that disturb one acre of land or more are required to obtain coverage under the NPDES Construction General Permit (CGP) issued by EPA and prepare a Stormwater

Pollution Prevention Plan (SWPPP). HW recommends that a copy of the SWPPP be provided to the Town a minimum of 14 days prior to land disturbance.

c. HW recommends that the Applicant clarify how the wetland to the west of the tennis courts will be protected. HW recommends that the Applicant provide a more robust erosion control barrier along the western property boundary.

d. HW recommends that the Applicant include temporary inlet protection for existing and proposed catch basins within the project site as well as within 100 feet of the construction entrance.

e. The Applicant has provided a stabilized construction entrance detail with a minimum length of 30 feet which is acceptable for a small residential development. HW recommends that the Applicant clarify where the construction entrance will be installed.

f. HW recommends that the Applicant clarify where the staked haybales demarcated on the plans will be supplemented with siltation fence.

g. The Applicant includes a detail for a temporary sediment trap. HW recommends that the Applicant show where on the site this practice may be placed.

h. HW recommends that the Applicant include proposed stockpile locations with appropriate erosion controls on the site plan.

9. Standard 9 requires a Long-Term Operation and Maintenance (O & M) Plan be provided.

a. The Applicant has provided a Long-Term O&M Plan in the Stormwater Report as required. HW recommends that the document become a standalone document to be provided to and signed by the property owners prior to occupancy.

b. HW recommends that the Applicant include maintenance tasks for the grassed swale.

c. HW recommends that the Applicant include a schedule for implementing routine and non-routine maintenance tasks to be undertaken after construction is complete.

d. HW recommends that the Applicant provide a simple plan that is drawn to scale and shows the location of all stormwater practices requiring inspections.

10. Standard 10 requires an Illicit Discharge Compliance Statement to be provided.

HW recommends that a signed Illicit Discharge Compliance Statement be provided to the Town prior to the discharge of any stormwater to post-construction best management practices.

11. Additional Comments.

a. HW recommends that the Applicant clarify which walls along the property line are to remain. Specifically, the extent of the wall adjacent to the pool house.

b. HW recommends that the Applicant revisit the connect of the proposed contour for elevation 74 near the eastern property line.

12. Concerns raised by abutters in 11-page document:

1) Location of wetlands: Ann Marton from LEC and Janet Bernardo form HW conducted a joint site visit on May 25, 2022. Ann Marton has provided a memorandum dated June

21, 2022 discussing her findings of the wetland delineation.

2) Water line easement:
    a) The existing property at 24 William Street includes a 20-foot-wide utility easement that the Applicant is using to loop the proposed water line. There are several large pine trees within this easement that may be impacted by the six-foot-deep trench needed to install a water line. HW recommends that the Applicant revisit the proposed location of the water service and discuss alternative locations with the Andover Water Department or document what will happen to these trees.
    b) Existing trees and vegetation: As noted above, HW recommends that the Applicant revisit the curve number and description of the surface conditions under pre-development and post-development conditions.
    c) HW believes that the proposed water line within the utility easement is proposed to loop the water line that is proposed within the roadway. Waterlines are frequently looped as a requirement of the water department to provide adequate water pressure throughout the main. HW recommends that the Applicant review the need for the water line within the easement with the water department.
3) Watershed flowing towards the west:
    a) The Applicant has proposed installation of an erosion control barrier along the western property boundary. HW recommends that a more robust barrier be installed, such as a siltation fence and a strawbale combination. The Applicant has proposed a vegetated swale in the vicinity of the existing tennis court. This swale will capture and direct the stormwater runoff from Lot 3 and Lot 4 towards catch basin CB-5 and the subsurface infiltration chamber system. In accordance with the Massachusetts Stormwater Standards the Applicant is required to document that post-development runoff does not exceed pre-development runoff off-site. HW has reviewed the Applicant's stormwater report and provided comments above under Standard 2.
    b) Nature Belt: The LEC memorandum dated June 21, 2022 includes recommendations regarding the proposed vegetation to be planted within the area to be naturalized.
4) Site Conditions: There is a concern that the existing site within 50 feet of the abutting property to the west has not been depicted properly. The Applicant is not increasing runoff to the west and the grades within 10 feet of the property line do not appear to be altered. The existing tennis court that is proposed to be removed is located approximately 10 feet from the west property boundary. HW recommends that the Applicant describe the construction measures to remove the tennis court without altering the adjacent grades.
5) Recent activities: HW notes that any tennis court surface would have been considered to have a curve number of 98 which is considered impermeable like a roadway or roof top. Under Standard 2 above, HW recommended that the Applicant adjust the curve numbers used for the existing surface condition listed as grass in the HydroCAD model.
6) Erosion and Stormwater Runoff: HW has provided comments above regarding the

Applicant's stormwater design and suggested improvements to the erosion control measures to comply with the Andover Stormwater Regulations as well as the Massachusetts Stormwater Standards.

7) Existing structures within 50 feet:
    a) The abutter at 28 William Street would like to see its house located on the plan set. HW suggests that the house at 28 William be shown in a similar manner on the plan set as the houses on the east side of the project site.
    b) Trees within existing utility easement. During the site visit, HW observed several trees within the utility easement. If a water line is required by the Andover Water Department HW recommends that the Applicant document what will happen to these trees.
8) Buffer Zone and House Layout: In Massachusetts a building is allowed to be constructed within the buffer zone of a wetland resource area by obtaining an Order of Conditions from the local Conservation Commission. The Andover Conservation Commission prohibits buildings to be constructed within 50 feet of a bordering vegetated wetland.
9) Soil Erosion and Sedimentation Control Plan: HW has made recommendations under Standard 9 above regarding the proposed erosion controls.
10) Locus: HW has reviewed the areas utilized in the stormwater calculations. The total site area modeled is contained to the subject property. The area highlighted on the locus map does not appear to directly impact the HydroCAD model.
11) Utilizing easement as driveway: The plan indicates a 20-foot utility easement. It is HW's understand that a utility easement cannot be used as a vehicle easement without prior approval by the Planning Board. Any changes from the proposed subdivision plans would require the Applicant to return to the Planning Board.
12) Stormwater: HW has conducted a peer review of the stormwater management design as described above.

<u>Conclusions</u>

HW recommends that the Planning Board require the Applicant to provide a written response to address these comments as part of the permitting review process. The Applicant is advised that provision of these comments does not relieve him/her of the responsibility to comply with all Town of Andover Codes and By-Laws, Commonwealth of Massachusetts laws, and federal regulations as applicable to this project. Please contact Janet Bernardo at 857-263-8193 or at jbernardo@horsleywitten.com if you have any questions regarding these comments.

Sincerely,

HORSLEY WITTEN GROUP, INC.

Janet Carter Bernardo, P.E.
Associate Principal

Veronica Seward-Aponte, E.I.T.
Environmental Engineer