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December 9, 2021

Town of Lynnfield Planning Board
c/o Ms. Emilie Cademartori, Director of Planning and Conservation
Town Hall, 55 Summer Street
Lynnfield, MA 01940

Re: ***SECOND UPDATED*** Review of Response to Comments and Definitive Subdivision Filing
109 Lowell Street, Vallis Way, Lynnfield, MA

Dear Planning Board Members:

This ***SECOND UPDATED*** peer review letter report is submitted to you in accordance with our proposal dated May 24, 2021. Authorization to proceed with the work outlined in our proposal was received by our firm via email on Tuesday, June 1, 2021. Hard copy of all the ***UPDATED*** materials necessary for our review was received by our firm from the Applicant's Engineer on Friday, December 3, 2021. ***UPDATED*** electronic files for our review were received on Wednesday, December 1, 2021. Additional information was received from the Applicant's legal counsel via email on Monday, December 6, 2021.

This ***SECOND UPDATED*** review of the Definitive Subdivision filing is being conducted to assure compliance of the project, plans, and submitted data with the requirements of the Town of Lynnfield, MA Rules and Regulations Chapter 375, Subdivision Regulations, Chapter 213, Storm Water Management (to the extent applicable) and by reference the Massachusetts Department of Environmental Protection (DEP) 2008 Stormwater Regulations and Handbook (to the extent applicable).

The following are our ***UPDATED*** comments and observations on the ***UPDATED AND REVISED*** plans and filing with respect to the requirements of the regulations and standard engineering practice. The numbered items in this report correspond to the numbered items in our previous reports dated June 17, 2021, and September 2, 2021, and the Town Engineer's Original Memo dated June 17, 2021. ***NOTE THAT THE UPDATES TO OUR COMMENTS AND ANY NEW COMMENTS ARE SHOWN IN THE BOLD ITALLIC TEXT***.

COMMENTS FROM LINDEN ENGINEERING'S JUNE 17, 2021, INITIAL REVIEW:

1. The exact status of the large land area containing the home, pool area and tennis courts (remaining Vallis property) on the subdivision plans as filed is not clear. The Vallis lot (approximately 3 acres) is not shown as an abutting property with an owner's name, address and an Assessor's Map and Parcel number nor is the property shown as a proposed lot within the subdivision. It is my understanding that an Approval Not Required plan creating the Vallis lot as a separate parcel was presented to and approved by the Planning Board late last year (I believe that this is the November 2020 plan referenced on the subdivision plan). However, we have found no evidence that this plan was recorded at the Registry of Deeds and no evidence that the portion of the property containing the roadway and the other five lots was placed in separate ownership.

   It is our opinion that unless he ANR Plan is recorded at the Registry of Deeds and the subdivision lots and roadway are transferred to a separate entity, the Vallis lot is part of the land being subdivided and needs to be shown as a lot within the subdivision. This property should be labeled as a lot and the data tables, applications, forms, fees paid, etc. should all be revised to reflect this as being a six (or more if the Vallis Lot is shown being further subdivided) lot subdivision.

   In addition, the stormwater calculations presented with the subdivision filing should account for the future subdivision of this lot into as many as three additional lots with their additional impervious area (beyond any

roof areas which should be required by the HOA to be fully infiltrated). The lot should also be included in any Home Owners Agreement approved by the Planning Board and the future subdivision of the parcel, if any, should be addressed by that Agreement.

Comment SATISIFIED. The remaining land of Vallis has now been labeled as "Lot 6" and therefore is a lot in the subdivision. Drainage from the potential subdivision of the land into 3 lots has been accounted for..

2. Based on the discussion at the Planning Board hearing conducted on May 26, 2021, it appears that the Planning Board may be in favor of eliminating the roadway extension/connection to the abutting Sagamore Spring Real Estate Trust property (golf course). We strongly suggest that the planning Board consider a motion at the continued public hearing to indicate to the Applicant and their Engineers that this roadway connection is being waived by the Planning Board and should be removed from the plans. Revised plans indicating the removal of this connection should be prepared and filed with the Planning Board. If the elimination of this roadway enables the length of the cul-de-sac to be shortened then the cul-de-sac should be revised as well.

   Further, if the elimination of this connection and the potential shortening of the roadway length allows Lot 5 to be reconfigured into a more traditional configuration then Lot 5 should also be revised. The Applicant's Engineer should also take a second look at the configuration of the roadway infiltration basin to see if it can be expanded into the area where the roadway connection was located and made more linear along the property line.

   Comment PREVIOUSLY SATISIFIED.

3. Based on the discussion at the Planning Board hearing conducted on May 26, 2021, it appears that the Planning Board may be in favor of granting a waiver for the length of the dead-end roadway. We strongly suggest that the Planning Board consider a motion at the continued public hearing to indicate to the Applicant and their Engineers that the length of the roadway more than 500 feet is being waived by the Planning Board and the plan as presented (or as modified based on removing the roadway connection to the abutting property) is acceptable to the Planning Board.

   Comment NOT SATISIFIED. The waiver for the length of the dead end roadway needs to be decided by the Planning Board. Until this waiver is granted the roadway and subdivision design remains in question and the design may need to change.

4. The Applicant's Attorney should address the encroachment onto Lot 3 by the abutting property at 6 Mohawk Lane. If there is a legitimate adverse possession claim by that abutter against the Vallis property then potentially Lot 3 would not have sufficient area to meet the required minimum lot area set forth in the Zoning Bylaw.

   Comment PREVIOUSLY SATISIFIED.

5. A written opinion regarding the conformance of Lot 5, as configured, with the requirements of the Town of Lynnfield Zoning Bylaw should be obtained from the Building Inspector.

   Comment PREVIOUSLY SATISIFIED.

6. It is our understanding, based on comments made by John Ogren at the Planning Board hearing conducted on May 26, 2021, that the roof drainage system and septic system proposed on Lot 5 will be modified. The revised subdivision plans should show the modified locations of the systems.

Comment PREVIOUSLY SATISIFIED.

7. The Subdivision Rules and Regulations state the plans shall show, *"Location, DBH (diameter at breast height) and species of any Significant Tree, any tree with a DBH greater than 12 inches within the proposed right-of-way, easement areas, or on neighboring properties within 10 feet of the proposed right-of-way or easement areas or located within a woodland. All trees determined to be Significant Tree by the Planning Board shall be noted on the definitive plan when submitted"*. Has the Planning Board determined if there are or are not any "Significant Trees" as defined by the Subdivision Regulations on the property? Is the Planning Board amenable to waiving the requirements to show trees >12" DBH in the wooded areas? Should trees within some distance of the perimeter of the property (for example Lot 5 on the southern and eastern property lines) be shown in wooded areas? Is the Planning Board in favor of the road being located as shown or would the Board be in favor of moving the road to save certain trees? All these questions affect what is shown on the plans and the design of the subdivision.

   Comment SATISIFIED by the revised plans. We do note that the roadway and lot layout has not been modified based on the tree locations, however, shifting the roadway one way or the other would not appear to significantly reduce the number of trees that will need to be removed. The Applicant also needs to be aware of the Tree Bylaw recently passed at the Fall 2021 Town Meeting and the financial implications it may have on the development of this property as planned.

8. The Stormwater Report (SWR) filed with the subdivision plans contains test pit data for test pits SWMA 1, 2 & 3, however, the locations of these test pits are not shown on the subdivision plan and there are sheets from the standard test pit reporting forms that were not included (depths to soil horizons, specific soil categories, etc.) in the SWR. The subdivision plans do show several test pits on the lots which appear to have been performed for the proposed septic systems on the five lots, however, no test pit logs for these test pits were provide. Test Pit Logs for all the test pits excavated on the property should be provided as part of the soil data portion of the SWR. The Applicant's Engineers should also confirm that no test pits were conducted for the proposed roof drain infiltration systems shown on the plan or if conducted they should be shown on the plan and the test pit logs provide.

   In addition, on the site walk we noted that monitoring wells were installed in the test pits for the Stormwater Management Area. Readings from these monitoring wells should be provided in the SWR.

   Comment NOT FULLY SATISIFIED by the Applicant's Engineer's response and additional documentation. We are still missing sheets from the standard soil test pit logs for test pits SWMA 1, 2 & 3. See comments under Item FF2 of this report for comments on the information provided by the geotechnical engineer.

9. The Planning Board should seek a confirmatory opinion from Town Counsel as to whether this subdivision is required to conform to the recently approved changes to the Stormwater Bylaw and pending changes to the Stormwater Regulations. We believe that they do not.

   Comment NOT SATISIFIED. We have not received any opinion from Town Counsel regarding the applicability of the changes to the Stormwater Bylaw and Regulations to this Subdivision.

10. We note that the emergency spillway for the Stormwater Management Area is located at the northwest corner of the property. Any discharge over this spillway from a combination of larger storm events will flow onto the adjacent property located at 18 Smith Farm Trail and on to the Sagamore Springs Real Estate Trust property. The Applicant's Legal Counsel should provide a memo to the Planning Board indicating their right to potentially discharge stormwater in a concentrated manner in this location as related to the Massachusetts General Laws and common law regarding the right to potentially discharge stormwater.in this manner and any liability to the Town incurred by approving this plan. He should note in his memo that the

stormwater discharge should it occur is being created in a concentrated location from areas which naturally drain to this location and additional areas which would not naturally drain to this location. The Applicant's Engineer should consider creating a longer, more linear emergency spillway from the basin (which is excavated below the natural grade and not created by a built up berm).

Comment SOMEWHAT SATISIFIED by the Applicant's Legal Counsel's response via email dated 12/06/2021. Town Counsel needs to review this email and render an opinion as to the legality of the arguments made in the email and any liability the Town may incur as a result of approving the plan as proposed.

11. The design information for the proposed roadway drainage system contained in the SWR is incomplete. The spreadsheet should include the runoff tributary to each catch basin or drainage inlet and calculations for the pipes connecting the catch basins or drainage inlets to the drain manholes and indicate which drainage areas are tributary to each location. A simple way to do this would be to include the roadway drainage system in the Hydro CAD modeling for the project. Inlet analysis/calculations should also be provided to demonstrate that the inlets can accept the flow from the 100 year storm and will not overflow to united destinations.

    Comment SATISIFIED by the revised documentation provided. However, we do recommend that, as a precaution, the catch basin at Station 9+63.32 should be changed to a double catch basin. Any bypass flow from the catch basins at Station 8+00 will flow to the end of the roadway and the double catch basin will provide additional inlet capacity at this location.

12. Safety concerns regarding the proposed roadway infiltration area should be addressed on the plan. This is a residential subdivision and the information submitted shows that the water depth in the proposed infiltration basin is over 3 feet in the 100 year storm. Are any mechanisms proposed to prevent children from wandering into this area?

    Comment SOMEWHAT SATISIFIED by the revised plans. The revised plans show a 4 foot high chain link fence around the top of the basin in an appropriate location to allow for maintenance and there are fence and gate details. The location(s) and size(s) of the gate(s) need to be identified on the plan.

13. The subdivision plans should also include a proposed easement for the drainage pipe/inlet located on Lot 5 opposite Station 2+0 of the proposed roadway.

    Comment PREVIOUSLY SATISIFIED.

14. The Applicant's Attorney should provide documentation for the legal right to construct the proposed water main connection to Smith Farm Trail and the existing easement should be shown on the plans with the legal reference.

    Comment SOMEWHAT SATISIFIED by the Applicant's Legal Counsel's response via email dated 12/06/2021. Town Counsel needs to review this email and the attached documents and render an opinion as to the viability of the easement for the Developer of the Vallis property to install a water line in this easement and what steps are necessary to clear up the record.

15. The water/drain crossing conflict located at station 7+10± should be addressed.

    Comment SATISIFIED by the revised plans.

16. The plans submitted do not show two benchmarks on stone bounds as required by the regulations.

Comment PREVIOUSLY SATISIFIED.

17. All sheets of the plan need to be signed and stamped by the Massachusetts Professional Land Surveyor and Professional Engineer who is responsible for designing the subdivision as required by 375-6.3.A.5 of the Subdivision Regulations.

Comment PREVIOUSLY SATISIFIED.

18. Detailed/enlarged grading plans need to be provided for the roadway intersection at Lowell Street and the cul-de-sac.

Comment SATISIFIED by the revised plans. We note that the grading in both these areas is very flat, and care must be taken during construction to ensure that no puddling occurs..

19. The Applicant's Engineer is encouraged to look at the roadway side slope on the eastern side of the roadway from Lowell Street to a point opposite Station 2+50± to see if the slope can be pulled closer to the roadway to minimize damage to the root systems of the trees located along the adjacent property line,

Comment SATISFIED by the revised plans showing the tree locations. We do recommend that the drain pipe opposite station 2+00 in this area be pulled back to the bottom of the slope and that the invert of the drain pipe be lowered to 148.25 (which is still above the predicted 100 year flood elevation in this area but will prevent any excess flooding.

20. There appears to be a drafting error on the radius for Lot 3 on the roadway (R=401.16 shown vs 405.47 actual).

Comment PREVIOUSLY SATISIFIED.

21. A statement should be added to the plans that there are no wetland boundaries located within 150 feet of the proposed subdivision or within 150 feet of any work. This statement should be based on an examination of the conditions on the ground by a qualified wetlands scientist,

Comment SATISIFIED by the revised plans.

<u>COMMENTS FROM TOWN ENGINEER'S JUNE 17, 2021, INITIAL REVIEW:</u>

The Department of Public Works performed a preliminary review of the subdivision titled "Definitive Plan, Vallis Way, Lynnfield, Mass" dated April 12, 2021, for completeness.

The Department recommends that the developer's engineer address some of the more significant issues and revise the plans before a more thorough review is performed. Here are the department's initial thoughts on the plans:

1. The plans need to be updated to properly show the status of #109 Lowell Street. It appears that this property should be a part of the subdivision, but it is not presented as such. This status needs to be clarified for the proper stormwater system to be designed to accommodate the runoff from the addition of this lo t(or lots). Also, other improvements such as street trees need to be added to the plan if this property is to be added as a lot.

Comment SATISIFIED by the response and revised plans.

2. It is the understanding of the department that the stub road will not be required as part of the subdivision. This change will impact stormwater runoff, the placement of the stormwater system currently shown on Lot #2, and the configuration of Lot #2. The removal of the stub road will need to be voted on and the plans will need to be revised to show these changes.

   Comment PREVIOUSLY SATISIFIED.

3. The Planning Board should vote on the waiver requested by the applicant to extend the roadway beyond the 500 foot requirement to make sure it is properly drawn.

   Comment NOT SATISIFIED. See detailed comments under Item 3 of Linden's Review above.

4. The developer's engineer should review the plans and stormwater report to make sure they comply with the Lynnfield Planning Board Rules and Regulations. From our initial review there are several missing items from the submission including: significant trees need to be located outside the proposed right of way; a second granite bound needs to have a benchmark; soil evaluator forms for the test pits performed need to be submitted; a detailed insert of the detention basin is missing and needs to be added to the topographic plan; the proper castings will need to be identified on the details (Hayes has been provided the model numbers several times in the past); and the sight distances are missing and need to be added to the topographic plan.

   Comment SOMEWHAT SATISIFIED as follows:

   a. ***Significant Trees: Comment SATISFIED by the revised plans..***

   b. ***Benchmarks: Comment PREVIOUSLY SATISFIED.***

   c. ***Soil Evaluator Forms: Comment \SATISFIED by the additional geotechnical documentation provided.***

   d. ***Detail of the Infiltration Basin: Comment SOMEWHAT SATISFIED by the revised plans. The plan of the basin is sufficient for the requirements of 375-6.4 D(11)) and a cross-section through the sediment forebay and the infiltration basin has been added with slopes, elevations and surfacing of the forebay and infiltration basin. The stone symbol shown on the plan in the sediment forebay needs to be expanded to elevation 146.5. A different stone symbol needs to be shown for the riprap apron at the inlet pipe and the emergency spillway (since they are a different size stone). The riprap apron at the end of the inlet pipe needs to be shown on the plan and profile (sheet 3).***

   e. ***Casting Model Numbers: Comment PREVIOUSLY SATISFIED.***

   f. ***Sight Distances: Comment PREVIOUSLY SATISFIED.***

5. Where does the 18" RCP located on 19 Smith Farm Road drain to? The Town has no record of this pipe.

   Comment PREVIOUSLY SATISIFIED.

6. Feedback from all the utilities needs be obtained including the Lynnfield Water District and National Grid. A contact for National Grid has been supplied to applicant.

Comment SOMEWHAT SATISIFIED by Applicant's Response and correspondence received from the Water District and Electric Utility provider. In terms of the water system, the district's letter dated June 23, 2021, contains several requirements precedent to the district providing water to this subdivision. I know the Applicant's Engineer did a hydrant flow test on 11/30/21 but have all the requirements in the District's June 23, 2021, letter been met or agreed to in writing? Has the District agreed to provide water to this subdivision? Has the District approved the pipe sizing and the connection to Smith Farm Trail? In terms of the electric system, has RMLD agreed that one transformer location is adequate for servicing all the lots and street lights in this subdivision? What provisions, if any, are being made for providing electric service to any future lots created out of the remaining Vallis land? We understand that natural gas is not being provided to this subdivision and therefore, none is shown on the plans.

7. More street lights need to be added. According to Chapter 375 Section 8.5.B(2)(a), street lights need to be "spaced 250 feet apart on <u>each</u> side of the street, with any pole being midway between the two on the <u>opposite side</u>"

   Comment SOMEWHAT SATISIFIED by the revised plans. Using the 250 foot criteria the last light on the roadway should located be at the point of reverse curvature between the 30 foot radius and the 60 foot radius on the east side of the cul-de-sac, opposite station 8+74±. An additional light should be added in front of Lot 2 near the drain pipe to the sediment forebay.

The DPW reserves its final thoughts on the development until the subdivision is thoroughly reviewed. This review will be provided to the Board once the plans have been revised to reflect comments it has received. Please let me know if you have any questions regarding these recommendations.

<u>NEW COMMENTS BASED ON THE REVISED PLANS AND INFORMATION AND A MORE DETAILED REVIEW OF THE SUBMISSION:</u>

PLAN REVIEW:

Our firm has conducted a review of the definitive plans for the subdivision by Hayes Engineering, Inc., Wakefield, MA dated April 12, 2021, and revised July 26, 2021 (sheets 1 to 8) to assess compliance of the plans with from the requirements of the Town of Lynnfield, MA Rules and Regulations Chapter 375, Subdivision Regulations. The following are our comments and observations on the plans with respect to the requirements of the regulations and standard engineering practice:

<u>SHEET 1 of 8 (now 10) – LOTTING PLAN:</u>

Waiver Requests:

The following are the waiver requests listed on sheet 1 of the plans and our opinion regarding the waivers:

SECTION 375-6.4.A(13) TO HAVE A LOCUS AT A SCALE OF 1"=40' – We believe that this requirement is a typographical error in the regulations (it should be 1"=400'). The plans do have a locus at a scale of 1"=300' which we believe is adequate for the purpose. ***Therefore, we see no issues in granting this waiver*.**

SECTION 375-7.1.D(1) TO HAVE A DEAD-END STREET LONGER THAN 500 FEET. – ***This issue needs to be decided by the Planning Board based on the criteria contained in the Regulations*.**

Plan Comments:

A. Based on 375.6.4-A(7), the bounds (bearings and distances) need to be shown for the existing easement to Smith Farm Trail.

Comment SATISIFIED by the revised plans.

SHEET 2 of 8 (now 10) – EXISTING CONDITIONS PLAN:

Waiver Requests:

The following are the waiver requests listed on sheet 2 of the plans and our opinion regarding the waivers:

SECTION 375-6.4.B.(1) TO SHOW ONE FOOT CONTOURS IN PLACE OF TWO FOOT CONTOURS. ***We see no issues with the requested waiver as the 1 foot contours provide added detail.***

SECTION 375-6.4.B.(4) TO NOT SHOW SLOPES STEEPER THAN 15%. ***We see no issues with the requested waiver as the 1 foot contours adequately display the steep areas on the property.***

Plan comments:

B. Based on 375.6.4-B(3), the locations of the existing fences on the property need to be shown on the plan or a waiver needs to be requested.

Comment SATISIFIED by the revised plans,

C. Based on 375.6.4-B(7), the locations of the Significant Trees as determined by the Planning Board need to be shown on the plan or a waiver needs to be requested.

Comment SATISIFIED by the revised plans,

D. Based on 375.6.4-B(8), the note regarding wetlands shown on Sheet 1 needs to be added to this sheet.

Comment SATISIFIED by the revised plans,

SHEET 3 of 8 (now 10) – PLAN AND PROFILE:

Waiver Requests:

NONE

Plan comments:

E. Based on 375.6.4-C(g), the locations of the water services need to be shown on the plan or a waiver needs to be requested.

Comment SATISIFIED by the revised plans,

F. We note that the utility service lines to Lot 1 are shown crossing Lot 2. This should be revised or a separate utility easement on Lot 2 for the benefit of Lot 1 should be added.

Comment SATISIFIED by the revised plans,

G. Handicapped ramps should be added to the plan on each side where the new roadway intersects the Lowell Street sidewalk. We note that there is a detail for a handicapped ramp on sheet 8 but none are shown on the plan.

Comment SOMEWHAT SATISIFIED by the revised plans, The ramps have been added to the plan, but they are shown stopping about a foot short of the back of the proposed sidewalk rather than extending to the back of sidewalk as they should.

H. Have any deep borings or test pits been done in the hill between stations 3+75 and 5+75 to determine if solid rock or ledge which may require blasting will be encountered during the grading?

Comment SOMEWHAT SATISIFIED by the revised plans. The response states that a boring was done at the top of the hill and rock was encountered at elevation 154.0. Our read of the boring log provided is that weathered road was encountered at elevation 160.0 and rock was encountered at elevation 156.0. The location of this boring needs to be shown on the plans. The home shown on the plans for Lot 5 has a proposed cellar floor elevation of 150.5 and excavation will have to go below that grade to provide for gravel and a concrete slab. While we understand the response about blasting for the roadway and drainage construction, it does appear that blasting will be necessary for the home on Lot 5 unless the design is modified.

I. Based on 375.6.4-D(5), the locations of the Significant Trees as determined by the Planning Board need to be shown on the plan or a waiver needs to be requested.

Comment SATISIFIED by the revised plans. We understand why the grading is the way it is proposed. Care will need to be taken in the final grading and paving to ensure that the intended grades are built as shown.

J. A profile of the drain pipe from the end of the cul-de-sac to the sediment forebay needs to be shown. Is there a riprap apron at the end of the pipe?

Comment SOMEWHAT SATISIFIED by the revised plans. The dimensions and stone size for the stone spillway at the end of the 15" drain pipe along with a construction detail for the spillway need to be added to the plan. The stone should be sized for the velocity in the 15: pipe and the slope it will be placed on.

Note that we assume that natural gas is not being proposed for this subdivision as none is shown on the plan.

SHEET 4 of 8 (now 10) – TOPOGRAPHIC PLAN:

Waiver Requests:

NONE

Plan comments:

K. Based on 375.6.4-D(5), the locations of the Significant Trees as determined by the Planning Board need to be shown on the plan or a waiver needs to be requested.

Comment SATISIFIED by the revised plans.

L. A retaining wall has been shown on Lot 5 to hold back grade from the roadway. This wall is 4.0 to 7.1 feet high. There should be an easement covering the area necessary to construct this wall as it is required to build the road to the grades shown. Also, the plans need to show construction details for the wall. Based on the height of the wall it is our understanding that the wall must be designed by a Massachusetts Registered Professional Engineer, conform to the requirements of the Massachusetts State Building Code, be approved by the Building Inspector and a Building Permit issued for the wall construction.

Comment NOT SATISIFIED by the Applicant's Engineer's response and the revised plans. The wall is necessary to build the roadway to the grades shown on the plan and, in our opinion, there should be an easement for the wall's construction and future maintenance as it is part of the roadway. In addition, a construction detail should be provided for the wall as it is in a highly visible location in the subdivision and the Planning Board may have input as to the appearance of the wall. In addition, the top of wall and bottom of wall grades on the plan are very difficult to read. A wall profile with these grades and stations along the roadway would help clarify this,

M. Based on 375.6.4-D(13), the note regarding wetlands shown on Sheet 1 needs to be added to this sheet.

Comment SATISIFIED by the revised plans.

N. Street trees are shown on this plan as required by 375.6.4-D(4) and the plan shows the required 3 trees/lot. However, given the subdivision layout there are no trees proposed on the west side of the roadway from the beginning to station 5+40±. I am guessing this is because the Applicant has not considered the remaining Vallis land as part of the subdivision. Also, Lot 5 has a very large frontage with only 3 street trees. The Applicant needs to consider adding street trees to provide a better appearance at the entrance to the new lots.

Comment SATISIFIED by the revised plans. Additional trees were added along Lot 6 (the remaining Vallis land). We recommend that the Applicant consider adding additional trees on Lot 5 (at the beginning of the road and in front of the home) and on Lots 2/3 at the end of the cul-de-sac.

We note that the plan lists the sight distances at Lowell Street as 375 feet to the west and 220 feet to the east. The required stopping sight distance for 30 mph (thickly settled area) is 200 feet.

SHEET 5 of 8 (now 6 of 10) – STREET LIGHTING PLAN:

Waiver Requests:

NONE

Plan comments:

O. There appears to be a discrepancy in the Applicant's Engineer's interpretation of the street lighting requirement. My understanding is that the street lights are laid out on one side of the street at intervals not to exceed 250 feet. Midway between the lights which are 250 feet apart a street light is placed on the opposite side of the street so that effectively there are street lights on both sides of the street at 250 foot intervals. The street light layout shown on the plan does not conform to this requirement.

Comment SOMEWHAT SATISIFIED by the revised plans. Using the 250 foot criteria the last light on the roadway should located be at the point of reverse curvature between the 30 foot radius and the 60 foot radius on the east side of the cul-de-sac, opposite station 8+74±. An additional light should be added in front of Lot 2 near the drain pipe to the sediment forebay (coordinate with gate location to basin and tree location).

P. As required by 375.6.4-E(6), the plan does not show the location of the street lighting control box in an easement.

Comment SATISIFIED by the revised plans.

SHEET 6 of 8 (now 7 of 10) – EROSION CONTROL PLAN:

Waiver Requests:

NONE

Plan comments:

Q. Silt sacks should be provided on both catch basins on Lowell Street (as well as all new on site catch basins) until all surfaces are stabilized.

Comment SATISIFIED by the revised plans.

R. The location of the stabilized construction entrance needs to be shown on the plan.

Comment SATISIFIED by the revised plans.

S. In our opinion the proposed straw wattles are not adequate for a project of this size. The erosion control should be a 12" compost filled Filtrex-soxx laid in a shallow trench and staked in place. The plan and details should be revised accordingly.

Comment SOMEWHAT SATISIFIED by the revised plans. The detail on Sheet 9 pf 10 should show the sediment control barrier being placed in a shallow trench.

T. The Erosion Control Plan needs to contain the typical operational notes about stabilizing disturbed surfaces left more than 14 days, erosion control inspections, maintenance of erosion controls, etc. Alternatively, a reference (bold, large type) could be made to the CPPPP in the Stormwater Report for operational details.

Comment SATISIFIED by the note on the revised plans referencing the CPPPP.

SHEETS 7 & 8 of 8 (now 8, 9 & 10 of 10) – DETAIL SHEETS:

Waiver Requests:

PLAN WAIVERS: TO NOT SHOW THE FOLLOWING DETAILS.

375-6.4.G(1)(h) DETENTION BASIN EMBANKMENT – ***THIS WAIVER IS NO LONGER NECESSARY AND SHOULD BE REMOVED AS A DETAIL HAS BEEN PROVIDED ON SHEET 10.***

375-6.4.G(1)(m) WOOD/STEEL GUARDRAIL INSTALLATION – ***No issue, no guard rail is proposed***.

375-6.4.G(1)(u) DESIGNATED TREE PROTECTION ZONE – ***No issue, none are proposed.***

Plan comments:

U. A gas line is shown on the roadway cross-section. Will there be gas in the roadway? If not the gas line should be removed from the cross-section. If yes the gas main and services need to be shown on the plans.

Comment SATISIFIED by the Applicant's Engineer's response and the revised plans.

V. The model number for the catch basin casting should be EJIW #OMA211000041.

Comment SATISIFIED by the revised plans.

W. The drain manhole casting should be EJIW #211125. Manhole steps should not be provided and poured concrete inverts should be shown.

Comment SATISIFIED by the revised plans.

X. The street light pole base needs to be changed to the Town Standard.

Comment SATISIFIED by the revised plans.

Y. The emergency spillway should contain some element (vertical granite curb, concrete trench, etc.) extending 6 inches below the bottom of the stone to cut-off any flow through the stone below the spillway elevation.

Comment SATISIFIED by the revised plans.

Z. Has the Water District reviewed and approved the water construction details?

Comment NOT SATISIFIED pending receipt of an updated letter from the Water District.

AA. A detail for a typical roof drainage system needs to be added (like 271 Main Street).

Comment SOMEWHAT SATISIFIED by the revised plans. The following note should be added to the roof drain detail as well as on Sheets 3 and 4 of the plans: PRIOR TO THE ISSUANCE OF A BUILDING PERMIT FOR ANY PARTICULAR HOME ON A LOT, THE LOT OWNER WILL RETAIN THE SERVICES OF A MASSACHUSETTS LICENSED SOIL EVALUATOR TO PERFORM SOIL TEST PITS WITNESSED BY THE TOWN ENGINEER IN THE LOCATIONS OF THE PROPOSED ROOF DRAINAGE SYSTEM(S) TO DETERMINE THE SOIL TYPES AND ESTIMATED SEASONAL HIGH GROUNDWATER ELEVATIONS AND RETAIN THE SERVICES OF A MASSACHUSETTS REGISTERED PROFESSIONAL CIVIL ENGINEER TO DESIGN THE ROOF DRAINAGE INFILTRATION SYSTEMS TO COLLECT AND FULLY INFILTRATE THE TOTAL RUNOFF VOLUME FROM THE ROOF OF THE HOME AND GARAGE AS WELL AS ANY ACCESSORY STRUCTURES INTO THE GROUND FOR A 100 YEAR STORM AS DETERMINED BY THE TOWN ENGINEER AND THE DESIGN SHALL BE PERFORMED SET FORTH IN THE MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION STORMWATER HANDBOOK. THE BOTTOM OF THE SYSTEMS SHALL BE A MINIMUM OF 2 FEET ABOVE THE ESTIMATED SEASONAL HIGH GROUNDWATER TABLE (IF THE STATIC DESIGN METHOD IS USED OR 4 FEET IF ANY OF THE DYNAMIC DESIGN METHODS ARE USED), A MONITORING WELL SHALL BE PROVIDED FOR EACH SYSTEM AND THE COMPLETED DESIGN SHALL BE REVIEWED AND APPROVED BY THE TOWN ENGINEER PRIOR TO THE ISSUANCE OF A BUILDING PERMIT AND THE INSTALLATION SHALL BE INSPECTED BY THE TOWN ENGINEER WHEN EXCAVATED TO SUBGRADE, WHEN THE INSTALLATION IS COPLETE (PRIOR TO BACKFILL) AND WHEN THE BACKFILL AND PIPING IS COMPLETE. AN AS-BUILT PLAN OF THE SYSTEM SHALL BE PROVIDED WHEN THE INSTALLATION IS COMPLETED.

<u>NEW COMMENTS BASED ON A REVIEW OF THE STORMWATER REPORT FOR THE SUBDIVISION:</u>

BB. The Stormwater Report needs to contain summary tables of the existing and proposed flows to each discharge point on or from the property for the 2, 10 and 100 year storms for comparison.

Comment SATISIFIED by the additional documentation and the revised HydroCAD Model.

CC. Catch basin inlet analysis needs to be provided for the proposed catch basins to show that the grate can collect the runoff from the 100 year storm and convey the runoff to the infiltration basin. Also, analysis for the pipes from the catch basins to the drain manholes need to be provided.

Comment SATISIFIED by the revised documentation provided.

DD. The Engineer needs to explain the positioning of the Stormceptor STC-900 in the drainage system. It seems to us that the Unit should be placed in an off-line configuration (splitter manhole to divert the water quality flow to the unit and bypass larger flows to the sediment forebay) at the lower end of the drainage system just before the sediment forebay. We do not understand the logic behind placing the unit

so far up in the drainage system. Also, water quality flow sizing calculations for the STC-900 need to be provided.

Comment SOMEWHAT SATISIFIED by the revised documentation provided. Now that we understand the purpose of the STC-900 and the infiltration system below the roadway we have some additional comments. Our first concern is that the Applicant's Engineer needs to verify with the manufacturer that the STC-900 can be configured with three inlet pipes as shown. Our second concern is that the location of the infiltration system below the roadway needs to be approved and accepted by the Town Engineer (past experience has been that the Town was not generally in favor of locating stormwater mitigation systems within roadways). Our last concern is that in the latest HydroCAD stormwater model this system is included in the stormwater mitigation for the project. Therefore, we will need two test pits (one at each end of the system) to document soil type and the Estimated Seasonal High Groundwater Table. The system must be 4 feet above the ESHGWT, or a mounding analysis must be provided.

Also, the plan view on sheet 3 shows the drain pipe between the proposed STC-900 at station 2+75 and the DMH at station 5+50 as a 12" RCP with a slope of 0.5%. The profile view shows the pipe as an 18" perforated HDPE pipe laid level (which we believe is the intent). This discrepancy should be corrected. A waiver will need to be requested to use HDPE pipe instead of RCP on the drainage system and the Town Engineer needs to approve this.

The Applicant's Engineer still needs to provide the sizing calculations based on the MADEP Methodology for this Stormceptor.

EE. Calculations substantiating the sizing of the sediment forebay at the infiltration basin need to be provided.

Comment SATISIFIED by the additional documentation provided by the Applicant's Engineer.

FF. We are concerned that the entire drainage from the subdivision flows to an infiltration basin and into the ground at that location. This is concentrating runoff at a single location and may have impacts on the abutting properties and major consequences if it does not continue to work over time. Therefore, we have the following comments:

1) The surfacing of the basin is not spelled out, however, in our opinion, the basin should be surfaced with 6" of ¾" crushed stone up to the emergency spillway elevation to allow maximum exfiltration and control vegetation growth.

   Comment SATISIFIED by the revised plans.

2) Since the calculations are based on the highest exfiltration rate for the soils in this location we believe that in place testing to substantiate the exfiltration rate used should be done. We further believe that a geohydrological study should be done to substantiate that the basin will perform over time with no adverse impacts to the abutting properties.

Comment SOMEWHAT SATISIFIED by the additional information and documentation. The Applicant's Engineer's response included a geotechnical report by Lahlaf Geotechnical Consultants, Inc. (LGC), dated November 22, 2021. ..LGC performed some on-site soil explorations and testing. With respect to the infiltration basin, it appears that they performed two test pits (TP-1 and TP-2) and two double ring infiltrometer tests. The locations of these test pits as well as Boring B-1 and Probe P-1 need to be shown on the plans. Based on the results of the infiltrometer tests, the design calculations for the proposed drainage system have been updated and revised based on the results of the infiltrometer tests.

The report provided by LGC is a geotechnical report for foundation design. Although it does include good information for the infiltration basin it is not the geohydrological study we requested. The purpose of the geohydrological study is to substantiate that the proposed infiltration basin will perform over time with no adverse impacts to the abutting properties (such as groundwater punch out) or increased groundwater levels. This information is still necessary to demonstrate that depositing the majority of the site drainage as proposed (more runoff into a concentrated area) will not negatively impact the abutting properties.

3) We recommend that the calculations be run for a 25 year storm immediately followed by a 100 year storm using the latest rainfall data from NOAA ATLAS 14. This is the latest rainfall data available and the MADEP is in the process of changing the standard for stormwater evaluations from Technical Paper 40 to NOAA ATLAS 14.

Comment SATISIFIED by the additional documentation provided by the Applicant's Engineer.

4) There needs to be some mechanics (in the HOA?) for controlling the amount of cleared land and impervious area not tributary to its own infiltration system on each of the lots and future lots on the remaining Vallis land that are tributary to the basin (table listing the values for each lot). The calculations presented are based on the current plan but each of these lots may be built with a different plan. We need to be sure that the lots cannot create more runoff tributary to the infiltration basin than the basin is designed for, and the calculations and approval are based on.

Comment NOT SATISIFIED. See comments in this report under Item LL regarding the HOA.

GG. Notes must be added to the plans and details regarding the roof drain design criteria and provisions for soil tests witnessed by the Town Engineer, Designs approved by the Town Engineer and installation inspected by the Town Engineer.

Comment SOMEWHAT SATISIFIED by the revised plans. The following note should be added to the roof drain detail (in place of the note used) as well as on Sheets 3 and 4 of the plans: PRIOR TO THE ISSUANCE OF A BUILDING PERMIT FOR ANY PARTICULAR HOME ON A LOT, THE LOT OWNER WILL RETAIN THE SERVICES OF A MASSACHUSETTS LICENSED SOIL EVALUATOR TO PERFORM SOIL TEST PITS WITNESSED BY THE TOWN ENGINEER IN THE LOCATIONS OF THE PROPOSED ROOF DRAINAGE SYSTEM(S) TO DETERMINE THE SOIL TYPES AND ESTIMATED

SEASONAL HIGH GROUNDWATER ELEVATIONS AND RETAIN THE SERVICES OF A MASSACHUSETTS REGISTERED PROFESSIONAL CIVIL ENGINEER TO DESIGN THE ROOF DRAINAGE INFILTRATION SYSTEMS TO COLLECT AND FULLY INFILTRATE THE TOTAL RUNOFF VOLUME FROM THE ROOF OF THE HOME AND GARAGE AS WELL AS ANY ACCESSORY STRUCTURES INTO THE GROUND FOR A 100 YEAR STORM AS DETERMINED BY THE TOWN ENGINEER AND THE DESIGN SHALL BE PERFORMED SET FORTH IN THE MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION STORMWATER HANDBOOK. THE BOTTOM OF THE SYSTEMS SHALL BE A MINIMUM OF 2 FEET ABOVE THE ESTIMATED SEASONAL HIGH GROUNDWATER TABLE (IF THE STATIC DESIGN METHOD IS USED OR 4 FEET IF ANY OF THE DYNAMIC DESIGN METHODS ARE USED), A MONITORING WELL SHALL BE PROVIDED FOR EACH SYSTEM AND THE COMPLETED DESIGN SHALL BE REVIEWED AND APPROVED BY THE TOWN ENGINEER PRIOR TO THE ISSUANCE OF A BUILDING PERMIT AND THE INSTALLATION SHALL BE INSPECTED BY THE TOWN ENGINEER WHEN EXCAVATED TO SUBGRADE, WHEN THE INSTALLATION IS COPLETE (PRIOR TO BACKFILL) AND WHEN THE BACKFILL AND PIPING IS COMPLETE. AN AS-BUILT PLAN OF THE SYSTEM SHALL BE PROVIDED WHEN THE INSTALLATION IS COMPLETED.

HH. The CPPPP needs to be changed to reference the compost filled sock.

Comment SATISIFIED by the revised CPPPP.

II. The catch basin maintenance in the LTPPP needs to state that if the sediment in the sump is more than half the sump depth on inspection the sump will be cleaned out.

Comment SATISIFIED by the revised LTPPP.

JJ. The LTPPP needs to contain inspection and maintenance frequencies and directions for the STC-900 Unit along with the manufacturer's written cleaning procedure.

Comment SATISIFIED by the revised LTPPP.

MISCELLANEOUS NEW COMMENTS:

KK. Has the Planning Board received a follow up memo from the Board of Health as to the suitability of the land?

Comment NOT SATISIFIED by the response and documents provided.

LL. We have not been provided with a copy of the proposed Home Owner's Agreement to review.

Comment SATISIFIED by the DRAFT HOA provided by the Applicant's Legal Counsel. We have reviewed the DRAFT HOA and have the following comments:

a. The reference to the O&M Plan/LTPPP should be updated to the latest version.

b. I did not see any provisions in the HOA requiring that all roof drains from structures be infiltrated into the ground in a system designed to infiltrate the 100 year storm as determined by the Town Engineer and that the test pits for the system(s), system design and installation shall all be approved by the Town Engineer.

c. I did not see any requirement that the runoff from any additional impervious area on the lot (other than roofs which are to be infiltrated into the ground) above 2,500 s.f. be fully contained on the lot and not contribute drainage to the roadway drainage system or the subdivision infiltration basin.

The DRAFT HOA should be forwarded to the Town Engineer and Town Counsel for their review and comment.

NEW COMMENTS BASED ON THE REVISED PLANS & INFORMATION RECEIVED 12/1 – 12/3/2021:

MM. We note that the latest plans show the existing driveway to the Vallis home from Lowell Street will be eliminated and a new driveway for the home will be constructed from the new roadway (about 90 feet from the intersection with Lowell Street) connecting to the remaining driveway for the Vallis home eliminating any potential conflict between the roadway and driveway along Lowell Street. The plans need to show the Lowell Street curbing (bituminous concrete) and sidewalk (bituminous concrete) being filled in where the driveway is being removed.

We look forward to discussing the project, this ***SECOND UPDATED*** report, and any questions that the Planning Board may have at the continued public hearing. We are available to discuss the project with the Applicant, the Town Engineer/DPW Director, the Applicant's Engineer and/or the Applicant's Attorney and representatives, as necessary. If you have any questions regarding this matter, or should you require any additional information, please do not hesitate to contact our firm.

Very truly yours,

LINDEN ENGINEERING PARTNERS, LLC

William A. Jones, Sr. Partner

Richard G. Cutts, P.E., President

Cc: Mr. Patrick McAlpine, P.E., Town Engineer
Mr. John Tomaz, Lynnfield DPW Director
Mr. Peter Ogren, P.E., P.L.S., Hayes Engineering, Inc.
Mr. Eric Lane, P.E., Hayes Engineering, Inc.
Mr. Jay Kimball, Esq.