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Site Analysis Narrative
Prepared For
Michael and Martha Mulhern
Phase 2 Preliminary Design Review for Subdivision
Tax Map 10 / Lots 8-6, 91 Bagdad Road

April 9, 2020

Dear Chairman and Board Members;

This is the updated site analysis narrative for phase 2, Preliminary Design Review submission for the above - mentioned project. I am not reiterating the existing conditions of the site in this narrative as it was included in the original Phase 1 submission and nothing has changed. The following information is included in this submission:

1. Site Context/Locus Map
2. Existing conditions Plan
3. Site Analysis Map
4. Conceptual Subdivision/Site Plans
5. Resource Impact and Conservation Plan
6. Preliminary Common Open Space Ownership and Stewardship Plan
7. Traffic Impact Analysis

The Site Context/Locus Map has not changed from the original Phase 1 submission and meets the requirements of Section 7.01 B. The Site Analysis Map has been updated to reflect the newly obtained fieldwork along the ROW to Gerrish Dr. and Ambler Way, and the color scheme and usable area calculations have been updated. The plan shows the usable area in green and further identifies the buildable area with the bold black outline and dot hatch. This hatched area identifies the area on the parcel that is most usable for building based on the soils, topography, access and natural resources. The other three colored areas, define the unsuitable areas. The calculation of usable area has been updated and shown in a table on the plan. The slight increase in density is the result of including the area within Madbury and applying the Durham Conservation Subdivision restrictions based on density.

The Conceptual Subdivision/Site Plans show the conceptual layout and the landscape detail around the houses and highlights the central common space. These two plans depict the basis of the design and show how the “pocket neighborhood” works. The importance of this central common space cannot be underestimated for this type of development to work. The area has dimensions of approximately 300’ long by an average of 75’ wide and will be a combination of natural and planted vegetation. This area is the centerpiece of the neighborhood. This space will foster a strong sense of community among the neighbors but preserve their privacy.

The following is a description of the four-step design process. MJS Engineering used the original survey, the HISS soil mapping, wetland delineation, test pit results and site walks to determine the overall development opportunity at the subject property.

- The first design step is the delineation of the common open space is based on our analysis of all the available information, as described above, then applying the regulations to determine usable and unusable areas. It is very much based on the site visits to identify the resources and determine the areas to avoid to the greatest extent possible and minimize the impacts if we cannot avoid all sensitive areas. MJS Engineering calculated the required area and percentage of common open space based on the zoning requirements. The combined unsuitable area on the parcel is 7.2 acres and the total usable area is 8.7 acres. This is shown on the site analysis plan depicted both in color and in the table. Given those areas, the required minimum common open space is 10.7 acres. 7.2 acres would be required as primary conservation area and the remainder would be secondary conservation area. The proposed subdivision will have approximately 10.7 acres as the primary and secondary conservation area and an additional 2.3 acres of open space reserved for recreation, community gathering, gardening, etc. There is an additional 1.0 acres of open space that encompasses the roads, utilities and stormwater systems. The common open space plan shows the open space areas and the site analysis plan delineates the usable and un-usable areas by using colors to show what is designated as primary conservation and secondary conservation area. The primary conservation area is all the land shown in pink (light & dark) and the secondary conservation area is the conserved land within the green (usable) area that is not for building.
- The second design step in the design process was siting the buildings. MJS used the existing conditions plans, topography, test pits, and the site visits to determine the best area. The best building site is on a small ridge, relatively level and easy to access given the location of the ROW from Gerrish Dr. and Ambler Way. The building site provides an area that requires very minimal impacts of soil disturbance, wetland areas and their buffers, and maintains a separation distance from conservation areas.
- The third design step is the layout of roads. The only viable access to the parcel is from the exiting public ROW connecting Gerrish Rd. and Ambler Way. Using this location provides the shortest possible distance to access the best available building site and the minimal impact to the wetland complex within the parcel. Unfortunately this access has a significant impact to wetlands in the ROW. This wetland area has a lower function and value because of the developed lots surrounding it. The runoff from the impervious areas and from lawns, on the developed lots, and the groundwater from older septic systems drain to this wetland area. All of this contributes to a lower function and value. The road alignment is across a relatively level and gently sloping area and there is one narrow ravine and wetland that is required to be crossed for the access. Because of this reason, cuts and fills are very minimal except at the crossing. The type of culvert and headwalls being proposed will help minimize the fills and wetland impacts to this larger more significant wetland complex.
- The fourth design step is the layout of lots. This subdivision will not have separate lots. The units are proposed to be in a condominium style of ownership. Boundary lines will be defined for the conservation land and open space to separate it for specific ownership.

The Resource Impact and Conservation Plan shows the impacts to the resources and the minimization of the impacts on the overall parcel. In addition this plan shows the stormwater collection and treatment systems used to minimize the runoff from impervious surfaces and shows how other erosion and stormwater controls are used to mitigate the impacts of development. The road has been designed to hug the contours and minimize the cuts and fills. In addition, the roads inside the subdivision are narrowed to the minimum width

possible for emergency vehicle access. This minimizes the impervious surfaces, and the removal of existing trees and vegetation for construction purposes, and reduces the surface water runoff. The main road connecting to Gerrish Dr. and Ambler Way is being designed to minimize wetland impacts and improve drainage for the existing subdivision. In addition there will be opportunities to improve the drainage and collect and treat surface water that is currently flowing untreated into the wetland on the ROW. The impacts are shown on this plan with hatching. The primary impacts include, wetland fills for road construction, minor road construction on steeper slopes for access to the buildable area and minor impacts to the wetland buffer area. However, given the fact that the subdivision layout allows for protection of 13+/- acres and only 2.0 acres are used for development, most of the primary impacts on the property are offset by the pocket neighborhood style and conservation subdivision design. The conservation of land area coupled with stormwater collection and treatment will significantly mitigate the secondary impacts to offsite resources. The layout of the houses, higher use open space and roads are mostly located on higher level ground, this allows the minimization of land disturbance by building on the flatter ground and the collection and treatment of stormwater is easier to treat before release to the receiving waters.

The Preliminary Common Open Space Ownership and Stewardship Plan shows the delineation of the open space and conservation land on the parcel. The goal is to divide the common lands into two categories. Open space and conservation land. The open space will be the common land directly surrounding the buildings, roads and utilities and restricted mostly for use by residents only. The open space will be divided further into two categories, open space for recreation and active residential use such as planting, gardening, etc. The second open space area will surround the roads, utilities and stormwater systems and will be restricted for those uses and maintenance of those utilities. The conservation land will be all the other remaining land area that includes both the primary conservation area and secondary conservation area as defined by the zoning regulations. The conservation land area is shown in red and the open space land area is shown in blue and green, respectively. The open spaces will be owned and managed by the homeowners association. Either the homeowners association or an outside entity can own the conservation land. If the conservation land is owned by an outside entity, this land will most likely be setup as a conservation easement. It is the intent of the Mulhern's to place restrictions on the conservation land but to allow passive use by both the homeowners within the subdivision and the adjacent property owners, access to the trails. The remainder of the conservation land would be protected in perpetuity from clearing, development, active uses, etc. with the intent to reserve this land in its natural state for the protection of both on and offsite natural resources, provide buffers to adjacent properties and protect the wetland complex on the site.

If you have any questions or need additional information, please do not hesitate to contact me.

Sincerely;

A handwritten signature in black ink that reads "Michael J. Sievert". The signature is written in a cursive, flowing style.

Michael J. Sievert PE
President