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DRAINAGE SUMMARY for 105 Perkins Road Subdivision Madbury, NH Tax Map 9 Lot 18

February 6, 2013

1.0 Purpose

A four lot subdivision is proposed on a 172.99 acre parcel on Perkins Road in Madbury, NH. Three 2± acre single family house lots (Lots 18N, 18O and 18P) will front on Perkins Road. The remaining 165.91 acre parcel will remain unchanged. Of this 165.91 acre area, 8.12 acres will remain for two existing house lots and the remainder will become a conservation easement. The purpose of this drainage summary is to analyze the stormwater impacts that the three 2-acre lots will have on a ditch line located on the conservation easement parcel.

2.0 Existing & Proposed Conditions

The three proposed house lots total 7.08 acres. The existing cover types are grass/meadow and wooded areas. Approximately 75% of the area of the 3 lots slopes toward a ditch located just beyond the proposed rear property lines. There is another ditch approximately 90' further east running parallel to the first ditch towards the lower pond. Both ditches flow southeast and converge north of a pond located directly across the street from the intersection of Perkins Road and Pendexter Road. The remaining 25% of the 3 lots flows through a wetland to the south before entering the ditch just prior to the same pond. There is also a pond directly upstream of the proposed 3 lots which outlets into the ditch lines.

The development of each lot assumes 12 percent of the entire lot will be impervious and the remaining area will be open space (lawn) in good condition. This is a conservative estimate for the development of these lots.

3.0 Drainage Analysis

A preliminary drainage analysis was completed to determine the increase in runoff from constructing single family homes on the three 2-acre lots. The analysis utilizes HydroCAD modeling software. This program models the runoff based on the SCS TR-20 method and the time of concentration based on the SCS TR-55 method. This analysis predicts the surface water elevation increase in the ditch during the 1 inch, 2, 10, 25, 50, and 100 year USDA/SCS Type III 24-hour storm events. Ninety percent of the storm events in New Hampshire are equal to or less than the 1 inch storm event. An existing base flow of 3 inches was assumed to be flowing through the ditch prior to each storm event.

The ditch has an average width of 6 feet and an average depth of 0.5 feet. The slope of the ditch is 0.6%. The expected increase from the development of the 3 lots is tabulated in Table 1.

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Table 1:

Storm Event	Ditch Surface Water Elevation Increase (Inches)
1 Inch	0.0"
2 Year	0.25"
10 Year	0.35"
25 Year	0.5"
50 Year	0.35"
100 Year	0.35"

As shown in Table 1 there are slight increases in the surface water elevation of the first ditch during the modeled storm events.

4.0 Conclusion

The nearest abutter (Tax Map 9, Lot 13A), is directly upstream of this ditch. The elevation difference is five feet from the low point at the corner of the abutting parcel to the start of the ditch line that is impacted by the three proposed lots. Runoff from these three lots flows downstream away from this abutting property. In the event the ditch or ditches become blocked, water would rise and spread out into the adjacent fields and continue to flow downstream toward the pond. The water would not back up onto the abutting parcel.

The analysis provides sufficient evidence that the ditches are capable of handling the expected increase in stormwater runoff generated by the development of the three lots. The upstream pond will mitigate additional flows reaching the ditches during storm events. In addition, the downstream pond will provide flow attenuation during storm events that will help to mitigate peak flows downstream of this development.

