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Chairperson McClintock and Stormwater Advisory Board members,

I expressed some of my concerns about the Merin Rd. project at the Stormwater Advisory Board meeting on Jan. 26, 2016. However, I have additional concerns and recommendations which I discuss below.

Evidence of problems downstream from Merin Rd. from current development

Alena Callimanis, my neighbor, is sending you an e-mail giving photographic and video evidence of significant problems caused by new development in Carrboro and Chapel Hill. Cumulative development is causing more runoff, more flooding and higher velocities that can damage property. Alena documents the area downstream from the proposed Merin Rd. project at Rogers Rd., in The Highlands and in Camden Place, at the walking bridge in Winmore, and at the bridge on Homestead Rd. going over Bolin Creek. Her photographs and videos show the damage to bridges as a result of storm water runoff under current conditions. They also document that culverts immediately downstream to their project are already at their maximum capacity. One can extrapolate that further damage to bridges, roads and property will occur when the runoff is added from the proposed Merin Rd. project.

The following are questions/recommendations that I have for you as you consider the Merin Rd. application.

The additive effect of runoff from Merin Rd. and Burch Kove:

When projects such as Merin Rd. are considered, the storm water runoff calculations and recommendations for retention pond size etc. seem to be based just on what is going on in the particular development under consideration. However, it appears that no consideration is given to the effect of stormwater runoff on the watershed downstream and to the stormwater runoff from other developments that have already been built, such as Burch Kove.

Project	Impervious Surface (sq. ft)	Storm Water Runoff per 1" storm (gal.) (using .62 gal./sq. ft.)	Storm Water Runoff per 2" storm (gal.)	Storm Water Runoff per 5" storm (gal.)
Burch Kove	158,135	98,043		
Merin Rd.	388,820	241,068		
Total		339,112	678,224	1,695,560

The table above gives crude numbers of runoff from the impervious surface in Burch Kove and the currently proposed impervious surface for Merin Rd. Referring to the table above, Burch Kove has 158,135 sq. ft. of impervious surface which translates into 98,043 gallons of runoff in a 1" storm, using a conversion factor of .62 gallons of runoff per square foot of impervious surface in a 1" rain event. If Merin Rd. is approved at its current density it will have 388,820 sq. ft. of impervious surface which will translate into 241,068 gallons in a 1" storm. The additive effect of the two developments will be 339,112 gallons of runoff in a 1" storm, 678,224 gallons in a 2" storm, and 1,695,560 gallons in a 5" storm.

Consideration of the simultaneous overtopping of retention ponds:

The previous chart does not take into consideration the timing and duration of rainfall. The peak flow of stormwater increases significantly in very heavy rainfall events. For instance, two inches of rainfall in two hours will have a much greater impact downstream than two inches of rainfall in 24 hours. In addition, if the retention ponds from Burch Kove and Merin Rd. were overtopped at the same time, the potential flooding problem would be greatly exacerbated. Will consideration be given during the planning process to the timing of when the retention ponds of Burch Kove and the proposed Merin Rd. project would overtop?

Case for a study of culverts and bridges from Merin Rd. to Bolin creek:

Even if the calculations were done to project the peak flow of stormwater from various amounts of rainfall in various amounts of time, the resulting numbers for both Burch Kove and Merin Rd. would not give the whole story of the impact downstream to Bolin Creek. Winmore and Claremont in the west also flow into Bolin Creek. The new planned greenway in Carrboro will increase the impervious surface on a hillside on the northwest corner of the Homestead Bridge the very route which children will use to commute to local schools. While it would be ideal to have a study of this sub-watershed of the Bolin Creek watershed, it is important to at least model water volumes and flow velocities immediately downstream. The runoff from Merin Rd. will eventually flow into Bolin Creek, but only after that water goes through the culverts under Rogers Rd., Skye Dr. in The Highlands, and Camden Lane in Camden Place. These culverts act as detention devices when they cannot handle volumes that come in a short amount of time. If those culverts are overwhelmed, then there will be damage infrastructure and property. Additionally, should retained water stream over the road, car accidents as well as road washouts could result.

Recommendations:

I recommend that you request that the Town Council postpone making a decision about changing the existing zoning to allow the Merin Rd. project until after a thorough, detailed analysis of stormwater impacts created by this proposed development on top of the current stormwater issues can be completed. Further, prior to the approval of the Merin Rd. development, the developer should demonstrate that, as stipulated in the LUMO 5.4 ordinance, the proposed development will not increase stormwater volume or rate above predevelopment levels.

While most rain soaks into a forested lot such as is currently found at Merin Rd., with only about 10% becoming run off, when this project is built with about 35-40% imperviousness, you can expect that 30% of the rainwater will run off downstream. While Chapel Hill ordinances clearly call for no increases in stormwater volume or rate of flow post development compared to predevelopment levels, photographic and video evidence presented by Alena Callimanis suggests that these ordinances are not being fully implemented.

I recommend that this board factors into any recommendation to the Town Council the effect that peak runoff will have on culverts and bridges along Rogers Rd., in the Highlands and in Camden Place (a short distance from Bolin Creek).

Questions from the point of view of a property owner downstream:

Once the town makes a decision, it cannot be undone. Therefore, I would like you, as advisory board members, to put yourself in the place of a property owner or town downstream from this development and to think about how to get redress in the event of a town decision that alters the amount of water entering downstream property.

It is my understanding that the proposed Merin Rd. Homeowners' Association document cites the responsibility of the Homeowners' Association to maintain the retention ponds and that the town will inspect the ponds every year. I also understand that the town will require developer to post a bond to pay for damage caused by failure of the stormwater facilities and that the Homeowners' Association is required to have a bond to pay for maintenance of the retention ponds.

If you were a property owner/taxpayer downstream, I suspect you might have the following questions:

- What does it take to trigger the bond held by the developer? In addition to damage from siltation, does the bond cover damage from flooding?
- Does the bond held by the Homeowners' Association pay for damage downstream in addition to maintenance of the pond? What is needed to trigger the bond?
- Is there a requirement that the Homeowners' Association fund an escrow account or a sinking fund to ensure that funds are always available to pay for maintenance on the ponds and or damage downstream?
- How is the cost to repair downstream infrastructure figured into the cost/benefit analysis of the Merin Rd. project? Will Chapel Hill or Carrboro bear the cost of the repairs?

While dated videos and photographs make it much easier to document the effects of runoff, what documentation would property owners need to provide to give sufficient evidence of culpability and to receive compensation from the Town or developer? Who is accountable for damage caused by a flood when the risk of harm to neighboring properties has increased as a result of a Town decision?

If there is damage downstream, how do homeowners seek redress? Is it a civil matter? Can property owners expect the town of Chapel Hill to bear any responsibility for their decisions, etc. and

help property owners? Can the developer be held responsible? For how long would the developer be held responsible? Can the future Homeowners' Association be held responsible and, if so, are they made aware of their liability? If damage is the result of the additive effect of multiple developments, how to property owners/taxpayers get redress?

Conclusion:

I request that you recommend that the Town Council declines to change the current zoning and postpones making a decision about this very dense development at Merin Rd. until after assurance based on numbers can be given that this development will not increase the risk of flooding downstream and the risk of further damage to infrastructure.

In the event that you wish to go ahead with this dense, urban development, I ask that you have the developer demonstrate prior to approval that the development will not increase stormwater volume or rate of flow compared to predevelopment levels as required by LUMO 5.4.

It is ironic that the tributary that goes by my house downstream from Merin Rd. winds around and flows back to Chapel Hill along the main stem of Bolin Creek only a few hundred yards from my house. We are all downstream from someone. Therefore, we all need to be good stewards.

Respectfully,

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