New Jersey Highlands Council **Letter 91**

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Eco Action Initiatives of Warren County, Inc. [redacted], Phillipsburg, NJ 08865 [redacted] Ms. Margaret Nordstrom, Executive Director New Jersey Highlands Water Protection and Planning Council 100 North Road Chester, NJ 07930 April 29, 2014 Re: Comments on the Monitoring Program and Recommendation Report Eco Action Initiatives would like to provide comments on one specific subject that is not well addressed in the Highlands RMP, which is the subject of karst limestone and development in areas of karst limestone. While we don't have the technical expertise to recommend detailed policy, we have had experience commenting to NJDEP on development proposals in areas of carbonate rock in the western Highlands and are familiar with the peculiarities of this geology. The Highlands Council should pay special attention to improving the quantity and quality of information available to municipalities about carbonate rock and its impact on the built environment. It is our experience that it is almost impossible to fully assess conditions of carbonate rock. There are no testing regimens available that can determine with a high degree of confidence what is underground. Carbonate rock is also ever changing, meaning that there is never certainty that the built environment will not be damaged or water contaminated by sinkhole collapses. The best course would be to limit development in these conditions to avoid property loss and groundwater contamination. To date there are no special restrictions or limitations on development on carbonate rock. However, there is the possibility of sensibly limiting impervious cover under stormwater rules governing recharge. Eco Action Initiatives successfully argued to the NJDEP that a different method of calculating stormwater runoff and recharge was required in karst conditions in order to meet the requirement of stormwater rules so that no significant increase in run-off is created by limiting recharge. This was in the case of a specific development proposal in Pohatcong Township, Warren County. In the case of carbonate rock, recharge is much greater than in other types of geology because of the abundance of holes in the rock into which stormwater can readily drain. The standard methods of calculating run-off and recharge to comply with stormwater rules do not model karst conditions. In the case of karst, if recharge is very great, run-off will also be very great once impervious cover limits recharge. The standard models of recharge do not reflect the very high recharge values in karst and therefore also do not model the very high amount of run-off that would result from the elimination of that recharge. There are methods of modeling karst conditions that should be required when planning development in karst to more accurately determine how much impervious cover is too much. It is almost certain that impervious cover would need to be less than would be possible in other conditions. This is especially important in planning for increased densities for centers, TDR receiving areas or affordable housing developments. Another problem of development on karst is the belief that voids can be located by geologic studies, filled or smashed and eliminated. This is only a temporary fix. As existing voids are filled, stormwater runoff is shunted from one sinkhole to another, causing new sinkhole collapses in different locations. An excellent object lesson is the construction of Route 78 near Phillipsburg. It is a famous engineering debacle with technical papers written about it as a cautionary tale about highway construction in karst conditions and the difficulty of knowing what is underground. In the case of Rt. 78, it turned out to be caverns. As soon as the highway was complete it began collapsing into sinkholes. In the recent past the Delaware River Bridge and Toll Commission spent tens of millions and about two years trying to fill voids and make underground bridges to span the caverns beneath the road. Right now the exit ramp to Phillipsburg is once again beginning to collapse. It is a very expensive proposition to fix structures that are going down into a hole. Karst is very good at recharging stormwater and therefore highly susceptible to contamination, as groundwater recharge is not filtered through layers of dirt and rock. It is also easy for contaminated water to migrate very far from the source of contamination through underground communications in rocks. Sinkhole collapses have been known to break septic lines and cause wastewater to enter groundwater resources. Imagine what could happen to energy pipelines in the case of collapsed sinkholes. The Council needs to consider the potential harms caused by linear development in karst. Overall, Eco Action Initiatives recommends that the Highlands Council create more detailed and specific policies regarding development in areas of karst. We encourage the Council to think more in terms of limiting development in these areas rather than looking for ways to remediate the geology because these methods have proven to be very expensive and not necessarily effective. By limiting development in these areas the Council would not only be protecting water, but also property that may ultimately be severely damaged by these unpredictable conditions. Laura Oltman, Director Eco Action Initiatives of Warren County, Inc.

Respondent

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