Montour Valley Alliance

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TESTIMONY ON STORM WATER MANAGEMENT AND FLOOD CONTROL MANAGEMENT ISSUES PREPARED FOR THE ENVIRONMENTAL RESOURCES AND ENERGY COMMITTEE OF THE PENNSYLVANIA HOUSE OF REPRESENTATIVES, SEPTEMBER 9, 1997

Mr. Chairman, Mr. Pippy, and members of the Committee, my name is Aldo T. Angelo, and I wish to thank you for the opportunity to participate in this hearing on storm water and flood control management issues as they relate to implementation of Act 167.

Although I am now retired, I worked as a Hydrometeorologist and Hydrologist for most of my 35 years with the U. S. Government. My positions included serving as a researcher and then as a river and flood forecaster, and finally I was responsible for providing hydrologic services, including flood watches and warnings, for the Upper Ohio River Drainage Basin in Western Pennsylvania.

I am here today representing the Montour Valley Alliance, a coalition of organizations, businesses, agencies, and private citizens in western Allegheny County that have as their common goal the environmental health of Montour Run, a stream whose watershed includes parts of the townships of Findlay, Moon, North Fayette, and Robinson, and the Borough of Coraopolis. The MVA seeks a balance between needed development in these townships and protection of Montour Run's natural, cultural, educational, and historic resources that provide tourism, recreation, and quality-of-life values for the people who live and work in the Watershed.

SCOPE: My testimony today focuses primarily on Section 13, Articles (1) and (2) of the Storm Water Management Act. As you know, the goal of Act 167 as stated in Article (1) is, "to assure that the maximum rate of storm runoff is no greater after development than prior to development activities," and Article (2) adds, "to manage the quantity, velocity, and direction of resulting storm water runoff in a manner which otherwise adequately protects health and property from possible injury." These are laudable goals, just as the Act itself is important and laudable legislation. The problem, however, is that there is little compliance with the terms of the Act in Allegheny County, and currently there exist few workable standards by which the goals stated in Section 13 can be achieved or enforced. I will propose a modification to the Act that I believe will provide, in part, the needed standards.

THE PROBLEM: The following is an example of the difficulty of implementing and enforcing the Act. I serve on the Board of Management of a nonprofit organization that is located in the

Montour Run Watershed. On a hill above this organization's facilities, a developer in 1988 began clearing existing vegetation in order to construct single family homes.

There are two natural "drainageways," or ravines, that lead from the housing development to a stream on my organization's property. Runoff from the top of the hill collects in these drainageways and then crosses our property before flowing into Montour Run.

During periods of high rainfall one of the drainageways carries sediment from the housing development and deposits debris in the bed of the stream on our property. The sediment in turn blocks the normal flow of water in the stream. The stream overtops its banks, and water floods across our property and into our facilities.

The cost of cleanup runs into the thousands of dollars for each flooding event, and the estimated cost of repairs needed after the latest flood in May of this year was as much as $40,000. Our organization wrote a letter to the association representing the property owners of this development, requesting reimbursement for damages. To date there has been no response. We do not know if the developers have complied with Act 167 or with local ordinances regarding storm water runoff. That is a moot point, since, if there was compliance, the results are unacceptable.

We strongly believe that the construction activities on the hill above us have increased runoff from that area through the removal of vegetation and installation of impermeable surfaces. We also believe that the additional runoff has increased the frequency and magnitude of flooding to our land and our facilities, and that this increased runoff crosses our land and enters Montour Run, contributing to the flooding that occurs in that stream. This is the kind of activity that Act 167 was enacted to govern.

Although it may appears otherwise, Act 167 provides little help for assessing and proving culpability for incidents like this. The burden of proof for recovering damages of course rests with the damaged party, and proof is almost impossible to obtain because of the nature of rainfall and runoff relationships and the difficulty of collecting the requested statistical proof.

RAINFALL VS. RUNOFF: The amount of runoff that results from any particular storm is dependent upon (1) the amount of rainfall, (2) the intensity of the rainfall, and (3) the amount of water already being held in the soil (the soil moisture conditions) before the rain began. Also, when the ground is frozen in winter, more rain will flow off the site than when the soil is soft and absorbent as occurs in summer. All of these conditions would have to be identical before the results of one storm can be compared accurately with another storm.

Under laboratory conditions, if it were possible, we could duplicate storm conditions and compare flood damage caused after development with pre-development conditions. The developer then would be clearly liable for the additional damages caused by the increased runoff directly attributable to that development. Outside of the laboratory, however, the landscape previous to development cannot be recreated, nor the exact conditions of the site be duplicated. In realistic terms it is rare that the proper conditions and information exist to achieve the goals stated in Section 13, Article (1).

It is my considered opinion, having watched the water level of Montour Run over the past fifteen years, that the flow has increased significantly from the earlier years. On my way to and from my place of employment I always make a visual inspection of the flow in Montour Run to get an idea of how rainfall and snowmelt were affecting smaller streams in the area. The flood in the spring of 1996 was the worst that I have seen. Again, this is only an opinion. Actual data are needed to establish it as factual.

We are seeking answers to what is causing the apparent increase in flows and flooding in parts of the Montour Run Watershed. (1) Do retention ponds fill with silt and debris over time? (2) Do the spillways of impoundment structures erode? (3) Are some local municipalities simply failing to comply with Act 167 as it is defined?

It is possible with a stream like Montour Run to take flow measurements over time to determine trends in flow patterns. The MVA is investigating the feasibility of beginning a project like this in Montour Run so that future trends can be identified. This requires keeping accurate records of soil moisture, stream stages, rainfall, snowfall, and snow depths. Streamflow ratings (which measure stage and discharge relations) have to be developed as well as velocity profiles. Expensive as these measurements are, this is the only sure way to determine how development has impacted the runoff in a particular area. No matter how well measurements are taken, however, these records will not be able to identify the specific developer responsible for a specific amount of increased runoff if there is more than one development that drains its storm water into the monitored stream. At best, these measurements will provide a good indication of the level of compliance with Act 167 that is taking place in the watershed.

RECOMMENDATIONS: There is no question that both the volume and rate of runoff from a site are increased when vegetation is replaced by impermeable surfaces, such as for roads and buildings. Act 167 therefore should be modified such that the "burden of proof" is placed on developers to certify and confirm by validated methods of computation that the as-built plans meet the requirements of the Act and that their activities did not increase the velocity and maximum runoff peaks.

Act 167 should define a standard with strict requirements that developers prepare pre-construction and post-construction peak discharge modeled projections for all developments for storms of various intensities and durations, i.e., for the 2-year, 5-year, 10-year, 25-year, 50-year, and 100-year storms. Also, Act 167 should mandate that flood facilities be periodically maintained and that plans be updated at least once every ten years to ensure that, in fact, Act 167 is being complied with.

Funding needs to be provided to ensure compliance with approved storm water management plans.

Thank you for this opportunity to provide my thoughts on this subject.