Preliminary Report on Runoff Characteristics from Utility-Scale Solar Sites: Virginia Tech College of Agriculture and Life Sciences Report

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The Virginia Tech College of Agriculture and Life Sciences has published a November 22nd report titled:

Preliminary Report on Runoff Characteristics from Utility-Scale Solar Sites ("Report").

The Report was prepared pursuant to a Virginia Department of Environmental Quality grant.

Authors of the Report include:

- Ryan Stewart, Professor
- Luis Mier-Valderrama, Graduate Research Assistant
- John Hoben, Research Scientist
- David Sample, Professor
- W. Lee Daniels, Professor Emeritus

The Report states that there is uncertainty regarding the amount and timing of stormwater generated from utility-scale solar sites. Further, it is stated to be unknown:

… if the parameters used to design stormwater detention basins and ponds, including curve numbers (CNs) and times of concentration, are being appropriately specified.

The grant from the Virginia Department of Environmental Quality initiated a six-year study to quantify and interpret stormwater generation from utility-scale solar sites across the state of Virginia.

The Report is characterized as presenting preliminary results from the initial stage (i.e., 1-2 years) of stormwater monitoring associated with that project. It is stated to have focused on three utility-scale solar sites.

Initial conclusions from the Report included:

- Catchments within solar arrays tended to produce rapid, and at times substantial, amounts of surface runoff during storms.
- Based on the median and maximum storms measured at each site, catchments with solar arrays produced greater runoff volumes than reference catchments.
- Many individual storms generated runoff from solar areas that corresponded to CN values > 80, though some large storms did not produce appreciable runoff.

- Apparent CNs (which were fit to each site using a subset of the storm record) varied considerably between catchments.
- Certain results are stated to imply that solar development is increasing stormwater runoff volumes relative to pre-development conditions across a range of sites and storm events.

A copy of the Report can be found here.