

From: [Thomas Holz](#)
To: [ECY RE WW SW Manual Comments](#)
Subject: Comments on SW Management Manual
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Comments on:

Washington State Department of Ecology Stormwater Management Manual for Western Washington, 2012 Update

The manual is based on deeply flawed assumptions. Stormwater management depends on a computer program (WWHM) to impose a standard for development. Although the program is derived from HSPF, a venerable and reasonably reliable stream flow simulation program, it was modified (originally by King County) to become a pond-sizing program for development projects. The assumptions made in coding the pond-sizing program are unjustified, and the program is thus invalid for the purpose of serving as a test for acceptability of a development project.

For example, it is assumed in the coding of ECY's program, that a stream flow model (HSPF), which requires calibration to two years of stream flow to be valid, can somehow be converted to model runoff on discrete sites. On such sites, stream flow data is non-existent and, more often than not, there is no stream to calibrate to. The most egregious and invalid assumption buried in the WWHM model is that predevelopment overland flow is defined as the sum of predevelopment surface overland flow (near zero) plus groundwater flow. This totally invalid assumption allows the developer to collect all precipitation on a site and route it as overland flow to the nearest stream (with catastrophic results on streams and aquatic life).

If WWHM is to continue to serve as the standard for development, it must be converted to a water balance model. The water balance model would recognize the predevelopment fate of precipitation that falls on most discrete sites in a watershed:

1. Evapotranspiration (ET) comprises about 18 inches per year (Beyerlein, 1999). Maintenance of ET is critically important to a healthy watershed.
2. Precipitation exceeding the volume evapotranspired is infiltrated (usually up to the 100-year storm event).
3. Overland flow runoff in a typical watershed is less than 1% of stream flow.

Thus the water balance model would provide the developer with the tools to assess whether the practices employed on his project will maintain a water balance in close approximation to predevelopment water balance. It is clear that, in this paradigm, evapotranspiration is the important parameter and its decline must be severely limited.

Without this change, and others that tend to reinforce low impact development practices, Puget Sound and its watersheds will continue on a path of steep decline.

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