



WATER RESOURCES TECHNICAL POLICY

WRTP-5

COMPUTATION OF REQUIRED ESD VOLUME

1. The goal of the current stormwater management approach is to modify the developed runoff characteristics of a project in such a way that the property hydrology emulates “woods in good condition” after development. This is accomplished through the use of ESD practices, and requires the computation of an ESD target volume.
2. When analyzing a project to determine the required ESD target volume, a P_E must first be determined. P_E is based on the developed impervious area, including existing and proposed imperviousness. The entire area of the property must be used to determine the P_E . When a property has more than one major drainage area (study point), each must be analyzed separately. Off-site areas are not included in P_E determination.
3. Apply this average P_E to the proposed disturbed area to arrive at the total required ESD volume for the new improvements. (R_v is based on the disturbed area, not on the total area to the study point.) In some cases, such as for some construction on existing family lots, the disturbed area may extend beyond the property line to include driveways or other necessary disturbance.
4. For residential subdivisions, each lot must be analyzed and fully controlled separately unless it drains to a shared treatment practice located within a stormwater management easement on a separate HOA parcel. In addition, each lot must provide full control for the respective portion of any shared driveway on the lot. Where roads are proposed, whether they are public or private, they must be treated separate from the lots via ESD located within the right-of-way/roadway parcel and/or via practices located within a stormwater management easement on a separate HOA parcel. Roadway treatment may not be provided on residential lots.

Example:

- Total area to the study point in which the improvements occur = 5 acres. Calculate the P_E for the entire area, including the proposed improvements. Let’s say the P_E comes out to be 1.8 in this case.
- Apply P_E of 1.8 to the proposed disturbed area to determine the ESD volume required for the improvements. Assuming for this example the proposed disturbed area is 2 acres, and is 25% impervious:

$$ESD_v = \frac{(P_E)(R_v)(A)}{12} \qquad R_v = 0.05 + 0.009(25) = 0.275$$

$$ESD_v = \frac{(1.8)(0.275)(87120)}{12} = \mathbf{3,593.7 \text{ cf}}$$