

Site Reforestation/Forest Restoration Credit – Proposal

Introduction:

Site reforestation involves planting trees on existing turf or barren ground at a development site with the explicit goal of establishing a mature forest canopy that will intercept rainfall and maximize infiltration. Reforested or restored sites that are protected and maintained under a perpetual conservation easement should be eligible for a stormwater credit.

Reforestation is accomplished through active replanting or natural regeneration of forest cover. Capiella (2005) reviewed a range of research that demonstrated the runoff reduction benefits associated with forest cover compared to turf cover. The runoff benefits include greater infiltration of stormwater, reduced soil erosion and removal of stormwater pollutants. Forest soils actively promote greater infiltration rates through surface organic matter and macro-pores created by tree roots. Forests also intercept rainfall in their canopy, reducing the amount of rain that reaches the ground. The evapotranspiration created by trees increases potential water storage in the soil.

The combined total of all reforested or restored forest areas is divided by two to determine net reforestation area (RA). This is due to the fact that it will take several decades for the replanted area to mature and provide full hydrologic benefits. The RA is subtracted from total site area when computing the water quality volume (WQv). The post-development curve number (CN) used to compute the C_p, Q_{p10}, and Q_{p100} for the reforested area can be assumed to be “woods or prairie in fair condition” when calculating the total site CN even though it will be decades before the reforested area reaches maturity.

Criteria for Site Reforestation/Restoration Credit:

Credit is obtained when a proposed reforestation/forest restoration project meets the following criteria:

- The minimum contiguous area of reforestation must be equal to or greater than 20,000 square feet (i.e. credit is not granted for planting individual street trees).
- A long-term vegetation management plan must be prepared and filed with the appropriate local stormwater, watershed or forestry agency to maintain the conservation area in a natural forest.
- The conservation area must be protected by a perpetual easement that clearly specifies that no future development or disturbance can occur within the area.
- The method used for reforestation or restoration must achieve 75% forest canopy cover within ten years.
- The planting plan must be approved by the appropriate local stormwater, watershed or forestry agency including any special site preparation needs.
- The construction plans and/or contract should contain a care and replacement warranty extending at least three growing seasons to ensure adequate survival and growth of the plant community.

As an example, the required WQv for a twelve-acre site with eight acres of impervious area and two acres of reforestation/restoration area before the credit would be:

$$R_v = 0.05 + 0.009(66) = 0.64$$

$$WQ_v = (0.9 \text{ inch}) (0.64) (12 \text{ acres})/12 = 0.58 \text{ acre-feet}$$

$$RA = 2 (1/2) = 1$$

$$\text{Site Area} = 12 \text{ acres} - 1 \text{ acres} = 11 \text{ acres}$$

Under the credit, 1 acres of reforestation/restoration area are subtracted from the total site area yielding a smaller required storage volume:

$$WQ_v = (0.9 \text{ inch}) (0.64) (11 \text{ acres})/12 = 0.53 \text{ acre-feet}$$

The recharge requirement (Rev) is not reduced using this credit.