



City of Redwood City Stormwater Pollution Prevention Program

Design Guidelines for Grass/Vegetated Swales

General

- A. The goal of the City of Redwood City's Pollution Prevention Plan is to filter out the contaminants in the stormwater before the water is discharged into the storm drainage system.
- B. Methods of treatment include the installation of grass/vegetative swales, or bioswales, or other micro-detention devices.
- C. The actual function of bioswales and micro-detention devices is further described in a publication entitled "Start at the Source", published by the Bay Area Stormwater Management Agencies Association.
- D. Refer also to the San Mateo County Vector Control Plan for guidance on how to address potential mosquito breeding habitat.
- E. The design must be supported by maps (8.5" x 11") and calculations.

Procedure:

1. The design flow rate shall be calculated using the Rational Formula: $Q = C * I * A$;
Where:
 - The design rainfall intensity, "I" in inches per hour, from the City's IDF curve.
 - The runoff coefficient "C" is 0.95 for impervious surfaces; 0.30 for pervious surfaces; 0.20 for grass swales.
 - The tributary area in acres and is measured from the site plan.
2. Bioswales should be designed with the following criteria:
 - Provide treatment flow capacity in the bioswale equivalent to a rainfall intensity of 0.2 inches per hour.
 - Use a Manning's Coefficient of 0.20.
 - Side slopes are 3:1 H:V.
 - The minimum longitudinal slope is 0.5 percent.
 - Minimum detention time is 9 minutes
 - Maximum flow rate is 5 fps.
 - Minimum flow rate is 3 fps.
 - Maximum detention period should be 72 hours.
3. Check the bioswale for water level during a 100-year storm event,
4. If the bioswale cannot convey the 100-year flow event, contain excess flow on site using a combination of ponding and underground piping systems; allow for slow release to the public system. (See Design Drainage Guidelines for Commercial Development)
5. Planting within the bioswale shall be a seed mix provided on the Improvement Plans. The seed mix shall be placed as a part of a three-step procedure that includes tackifier, straw and fertilizer. (See "Start at the Source")