Appendix E: Hydrograph Methods

HYDROGRAPH METHODS

Sources:
Technical Reference Manual, Lake County Stormwater Management Commission. June 1992
Compendium of Watershed-Scale Models for TMDL Development, EPA. June 1992.

There are a variety of hydrologic analysis packages available to calculate the runoff from a watershed. These are classified into single event (i.e. HEC-1) or continuous simulation models (i.e. HSPF). Several programs are listed below.

The Flood Hydrograph Package (HEC-1)
HEC-1, was developed by the U.S. Army Corps of Engineers Hydrologic Engineering Center (HEC). The model is designed to simulate the surface runoff response of a drainage basin to a precipitation input. The model represents the basin as an interconnected system of hydrologic and hydraulic components. Each component models an aspect of the precipitation-runoff process within a portion of the basin, commonly referred to as a subbasin. A component may represent a surface runoff entity, a stream channel, or a reservoir. Representation of a component requires a set of parameters which specify the particular characteristic of the component and mathematical relations which describe the physical process. The result of the modeling process is the computation of stream flow hydrographs at desired locations in the river basin.

Technical Release No. 20
The Technical Release No. 20, "Computer Program for Project Formulation - Hydrology", TR-20 was originally developed by the USDA, Soil Conservation Service (SCS) and has been modified by the SCS and other groups. TR-20 uses the procedures described in the SCS National Engineering Handbook, Section 4, Hydrology (NEH-4), except for the newly revised reach routing procedure (Att-Kin method) which has superseded the Convex method.

Technical Release No. 55
The Technical Release No. 55, "Urban Hydrology for Small Watersheds," TR-55 presents simplified procedures to calculate storm runoff volume, peak rate of discharge, hydrographs, and storage volumes required for detention structures. These procedures are applicable in small watersheds, especially urbanizing watersheds. First issued in January 1975, TR-55 incorporates current SCS procedures described in the SCS national Engineering Handbook, Section 4, Hydrology (NEH-4).