Simulation and Design in one package

Computer programs for stormwater management can have various objectives.

- **simulation** and analysis
- **design** of facilities
- detailing and **drafting**

Many programs are concerned with the first of these with some facility for trial and error design.

Of the programs used for computer aided drafting, the Hydrology module of Softdesk is one but uses simple procedures for hydrology Simulation.

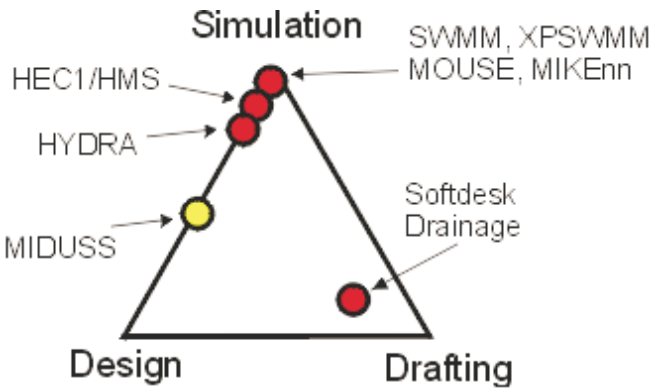
MIDUSS offers a blend of simulation and design. It provides powerful decision support system for the sizing, design and evaluation of stormwater management facilities for quantity control.

MIDUSS has been around since 1984. Even before this date it was used for teaching civil engineering students the fundamentals.

It has always been a combination product - Simulation AND Design. It is our philosophy that the two cannot be effectively separated.

The MIDUSS roots are in education and this theme has continued over the nearly 20 years. The software strive for ease of use and flexibility so that the engineer can applies their skills efficiently and effectively.

Part of the MIDUSS name is the "I" for interactive. Back in the early days most programs were batch oriented - but not MIDUSS. In keeping with its desire for ease of use and efficient design it has always been fully interactive.



Interactive means that you design the network as the peak flow goes downstream. Each component can be optimized because you "interact" with the program so that the flow is conveyed in an efficient design. MIDUSS constantly provides you with feedback on how the design is going. If a pipe is surcharged, you will be told and encouraged to change the design.

"It is our philosophy that Simulation and Design cannot be effectively separated."

MIDUSS®

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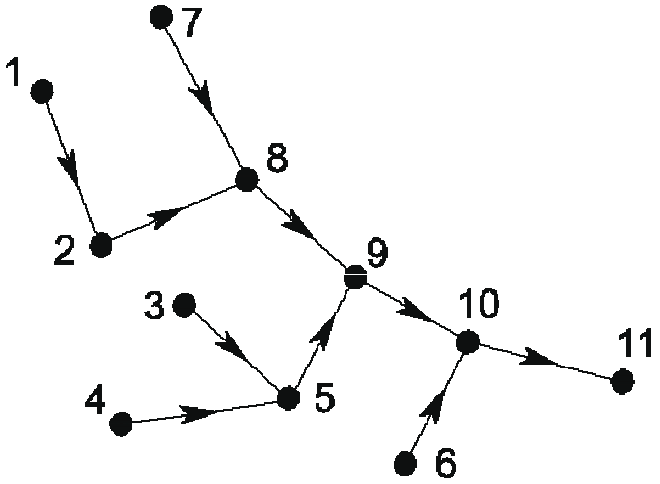
The drainage network is represented as a tree of N nodes connected by (N-1) links representing conveyance, detention or diversion devices. Each node represents a point at which runoff may be introduced. Since the network is a spanning, non-circuited tree, nodes can have any number of inputs but only one output.

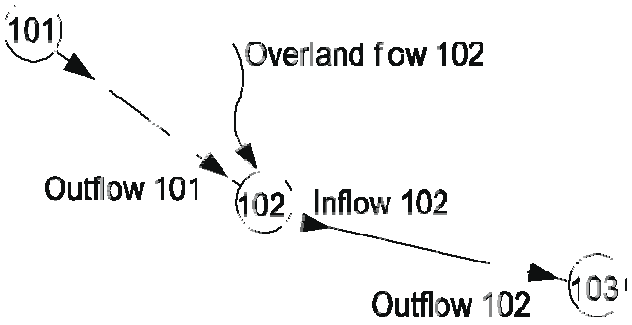
For a given rainfall event, the solution takes the form of a marching solution which moves downstream computing flow hydrographs for the entire time-horizon at successive stations or nodes. At junctions, the accumulated hydrograph is stored to allow other tributary branches to be processed. When the flow from all contributing branches has been computed the solution continues downstream towards the root of the tree or outflow point

Some programs, such as EXTRAN, use a time-wise marching solution which has the advantage of taking into account the potential effect of backwater on the capture capacity of a minor system.

On the other hand, the downstream marching solution used in MIDUSS allows the program to be completely interactive, letting you work downstream in a logical fashion not unlike the approach taken in the old rational method. At each location in the network, you can see the entire hydrograph and gauge the extent to which runoff simulation is reasonable and also the effectiveness of proposed design elements in the drainage network in achieving the objectives of stormwater management. Errors can be corrected or design decisions refined before the results are transmitted downstream..

At the end of the design, you can easily apply a different storm to your designed network. Problem areas of the design can be identified and corrected easily. You do this interactively in what we call Automatic Mode - a simulation process which allows momentary stopping of the simulation to correct or anayze a particular part of the design. Once reviewed, the simulation continues to the end of the design.





"Your best engineering skills come out when you are designing interactively."

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