

WaterElements

WaterElements is a hydrological model for the long-term simulation (several years) of water and pollutant transport from urban catchments. It is developed and distributed by [Fankhauser GEP Data Consulting](http://www.gepdata.ch).

Predefined elements (catchments, sewers, combiners/unions, overflow structures, river sections, lakes as storage elements etc.) can be connected to build a network.

The concept of the model is comparable to programs such as SAMBA, SIMBA, KOSIM, STORM or City-Drain.

The simulation time step is given by the temporal resolution of the rainfall series used. The models used in the program are optimized for a time step of 10 minutes to achieve the shortest possible computing time. A 5 min time step can be generated with 10 min rainfall data. Other interpolations are not possible at this time.

Any number of pollutants can be freely defined by the user. The transport is modeled in a relatively simple way: each element is considered completely mixed.

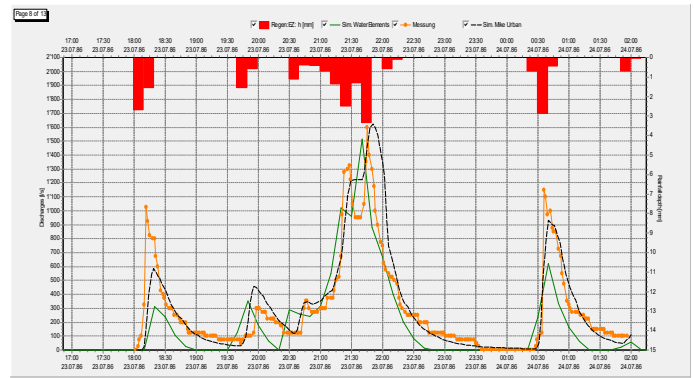
The STORM approach to assessing the impact of overflows on rivers during wet weather is only possible for deterministic calculation, but WaterElements can be easily combined with [REBEKA](#) by generating the input file from a complex network for REBEKA.

The network is set up with a simple command language. But it can also be created graphically (see e.g. below) and the commands can be generated from it. However, the commands are relevant for the calculation.

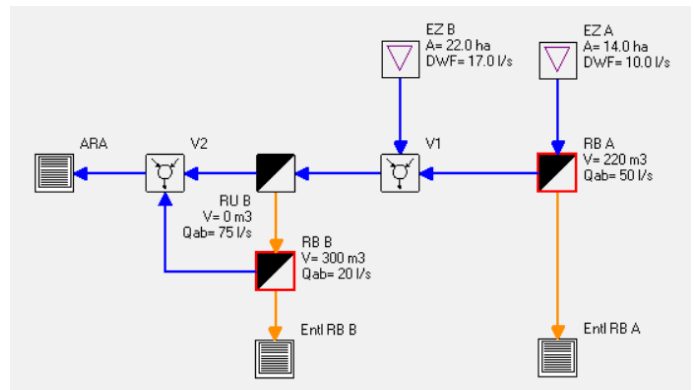
The most important results of the calculations, such as overflow characteristics of CSO's (overflow volume, duration, frequency, pollutant loads, etc.) are displayed in a table that can be copied to Excel or Word by the clipboard.

Name of Structure	Overflow Volume [m3/a]	Duration [h/a]	Frequency [1/a]	Q max [l/s]	NH4 [kg/a]	TSS [kg/a]
RB Egg	31'609	121.8	37.5	1'581	61.73	3582
RB Vog	563	1.6	2	440	0.5150	62.43
HE A0	216	1.0	2.5	216	0.1593	23.84
HE M15	4'849	8.4	12.9	1'084	5.536	540.4

The display of time series of flows, concentrations and loads of elements over the entire simulation time is possible. It is divided into pages, with one page covering about 1 week. Zooming into a shorter area is also possible. Measurement data or data from other programs (e.g. SWMM) can be imported and displayed overlaid. The data is also presented in tabular form.



Case Study III "Overflow from combined sewer systems" from the new Directive "Wastewater management during wet weather" (see Module B, Annex 2) could be implemented in WaterElements as follows:



In general, the drainage concept of a drainage master plan can be mapped relatively quickly into a WaterElements network, as the abstraction stage is very similar.

With the help of the built-in [scripting language Lua](#), the modelling of a management (**Real Time Control**) is possible. On the other hand, it can also be used to create evaluations and perform calculations that are not available by default.

The software is only available in English so that it can be used in all parts of Switzerland. Use should therefore not be a problem. Documentation, tutorial and various instructions are also available in German.

Licensing

The program can be licensed on a monthly basis for CHF 120 per month. The more months in a row that are licensed, the cheaper the license per month becomes. An annual license costs CHF 900 if it is ordered at the beginning of the year.

Without a license, the program runs in demo mode. Then the simulation time is limited to one month. There are no other restrictions.

Please send an email to us if you are interested to get a demo version or would like to license it.