

# Test 1 – Flooding a disconnected water body

## 1. Modelling performance tested

The objective of the test is to assess basic package capabilities such as handling disconnected water bodies and wetting and drying of floodplains.

## 2. Description

This test consists of a sloping topography with a depression as illustrated in Figure (a). The modelled domain is a perfect 700m x 100m rectangle. A varying water level, see Figure (b), is applied as a boundary condition along the entire length of the left-hand side of the rectangle, causing the water to rise to level 10.35m. This elevation is maintained for long enough for the water to fill the depression and become horizontal over the entire domain. It is then lowered back to its initial state, causing the water level in the pond to become horizontal at the same elevation as the sill, 10.25m.

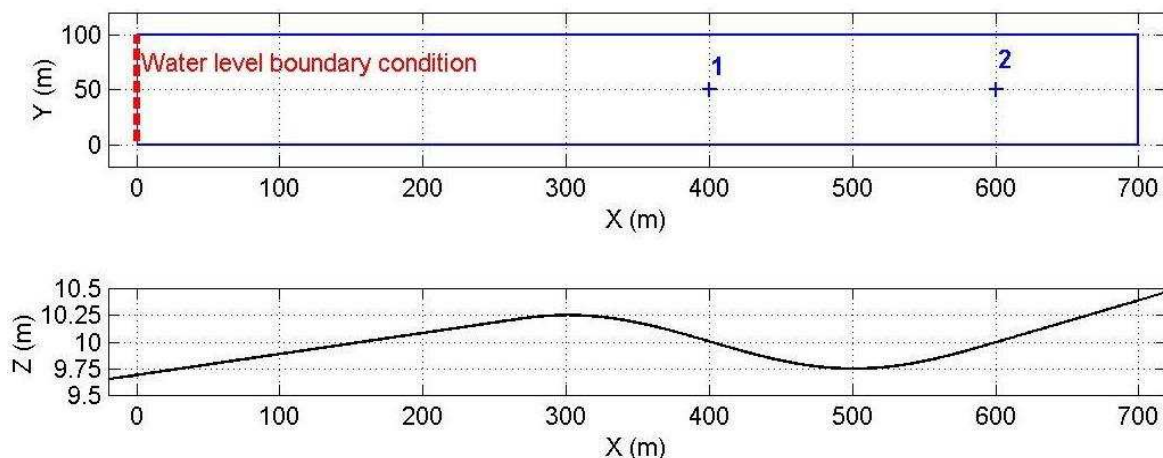


Figure (a): Plan and profile of the DEM used in Test 1. The area modelled is a perfect rectangle extending from X=0 to X=700m and from Y=0 to Y=100m as represented.

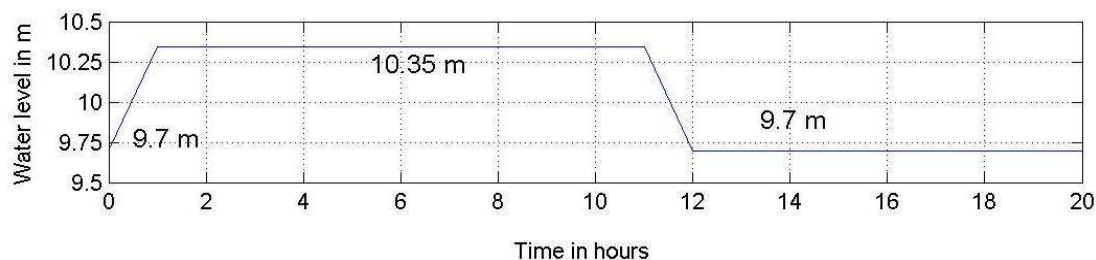


Figure (b): Water level hydrograph used as boundary condition (table provided as part of dataset).

### 3. Boundary and initial conditions

Varying water level along the dashed red line in Figure (a). Table provided as part of dataset.

All other boundaries are closed.

Initial condition: Water level elevation = 9.7m.

### 4. Parameter values

Manning's n: 0.03 (uniform)

Model grid resolution: 10m (or 700 nodes in the area modelled)

Time of end: the model is to be run until time  $t = 20$  hours

### 5. Required output

Software package used: version and numerical scheme.

Specification of hardware used to undertake the simulation: processor type and speed, RAM.

Minimum recommended hardware specification for a simulation of this type.

Time increment used, grid resolution (or number of nodes in area modelled) and total simulation time to specified time of end.

**Water level** versus time (output frequency 60s), at two locations in the pond as shown in Figure (a) and provided as part of the dataset.

### 6. Dataset content

| Description  | File Name       |
|--|-----------------|
| Georeferenced Raster ASCII DEM at resolution 2m          | Test1DEM.asc    |
| Upstream boundary condition table (water level vs. time) | Test1BC.csv     |
| Location of output points                                | Test1Output.csv |

### 7. Additional comments

Participants are asked to provide model results **at least** for the grid resolution specified above.

Model results for 1 alternative resolution or mesh may also be provided.

Participants are asked to justify their reasons for not carrying out the test, or for carrying out the test using an alternative resolution.

Total water volume on the floodplain at the end of the simulation.