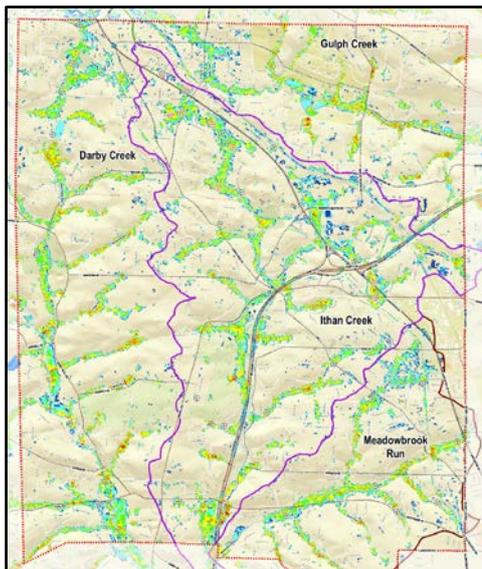


Flood Modeller Pro

Watershed assessment for Radnor Township, Pennsylvania, USA

CH2M has used the 2D FAST (Dynamic) solver within Flood Modeller Pro to identify areas with the highest risk of flooding as part of a watershed assessment for Radnor Township in Pennsylvania, USA.



Flood depth grid results for Radnor Township watersheds using the 2D FAST (Dynamic) solver

CH2M developed flood models using the 2D FAST (Dynamic) solver for each of the four watersheds located within Radnor Township. These watersheds and their corresponding areas are summarised in Table 1.

A range of design events were simulated in the four watershed models in order to understand the variations in extent and severity of flooding for different storm magnitudes and durations. The design events and their corresponding rainfall depths, which were based on point precipitation frequency estimates at Villanova, PA, USA, are detailed in Table 2.

The 2D FAST (Dynamic) solver enabled CH2M to produce a quick representation of the location, extent and severity of known flood locations and to identify additional areas that may be prone to further flooding.

High flood risk areas were ultimately chosen based on the streets and parcels that contained the most significant flooding based on the modelled flood depth grid results.

The simulated flood extents corresponded with the majority of the Township's known flooding areas. Several of the additional areas identified to be prone to flooding based on model results were also confirmed by the Township.

The high flood risk areas determined by the modelling are currently being investigated in the field. Concept designs, ranging from increased conveyance capacity to implementation of green infrastructure, will be developed to alleviate flood risk in these areas.

Watershed	Area
Ithan Creek	12.9 km ²
Meadowbrook	6.1 km ²
Darby Creek	44.6 km ²
Gulph Creek	13.6 km ²
TOTAL	77.2 km ²

Table 1: Radnor Township Watershed Areas

Design Event	Rainfall Depth
1-year, 1-hour	1.19 inch
2-year, 1-hour	1.44 inch
5-year, 24-hour	4.12 inch
25-year, 24-hour	5.83 inch
100-year, 24-hour	7.61 inch

Table 2: Radnor Township Design Event Simulations

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With a legacy stretching back 40 years, Flood Modeller allows users to model rivers, floodplains and urban areas, using our powerful 1D and 2D solvers.