2-DIMENSIONAL OVERLAND FLOW MODULE

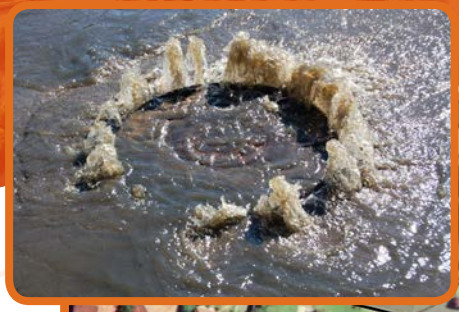
XP 2D

XP solutions

model with confidence

MODEL WITH CONFIDENCE

XP2D



WHAT CAN XP2D MODEL?

Dynamic, fully integrated 1D and 2D flow modeling allows you to solve many complex problems. With the ability to track water in and out of channels, inlets, culverts, bridges, pipes, across land surfaces, and around or through structures, you will be able to analyze flooding more accurately than ever before.

- **Flood Mapping.** XP2D is the perfect tool to map the extents of surface flooding (depth and velocity) from rivers and urban drainage networks; these can be used to develop emergency response procedures and to design engineering solutions to mitigate flooding.
- **Urban Pipe/Channel Overflow.** Find out where water will travel overland when it leaves the confines of a 1D drainage network.
- **Spatially Variable Runoff.** 2D hydrology is ideal for identifying pluvial flood hazards, designing LID/WSUD/SuDS-friendly surfaces, and examining spatial rainfall distribution.
- **Tidal Surges and Dambreaks.** View overland flow and its effect on drainage networks when a catastrophic flooding event occurs.
- **Levee/Floodwall Interior Drainage.** Analyze drainage system performance, pumping needs and overflow flooding behind levees or floodwalls.

VERSATILE RESULTS

The bottom line requirement for your clients or regulators is the ability to see and understand the design or analysis results that you submit to them. XP2D will help you exceed their expectations.

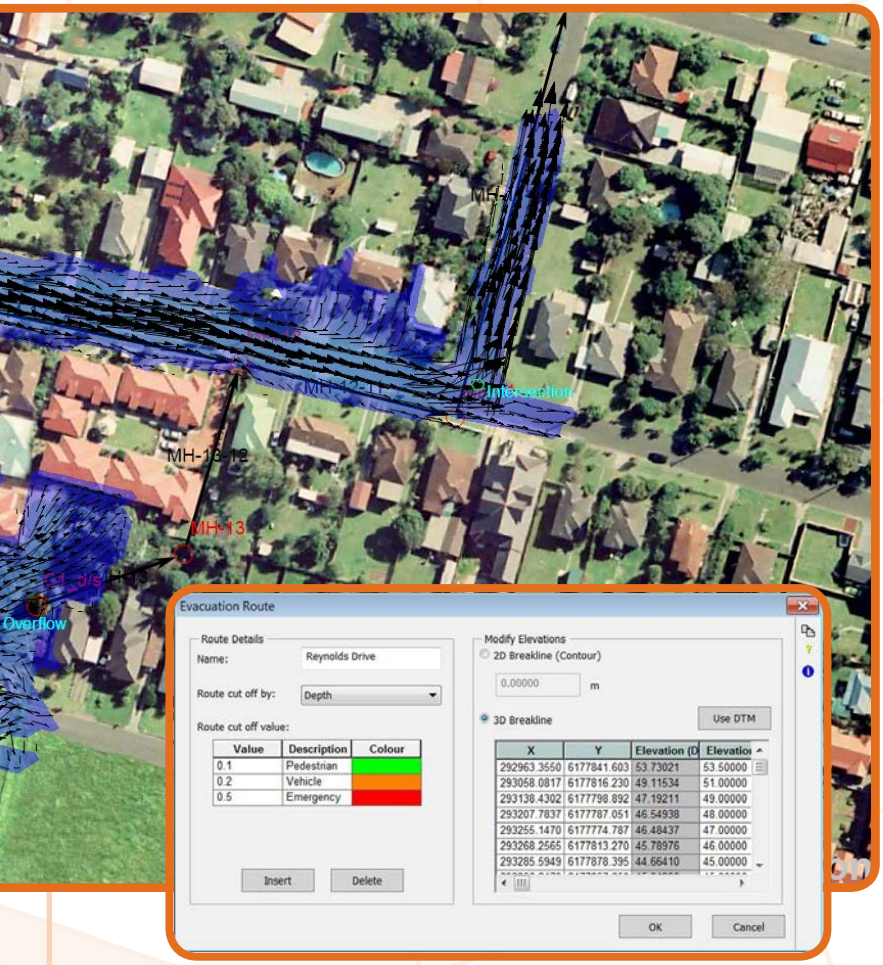
Maps. 30 different color-coded maps available to create and print/export including flood depth, velocity and hazard overlaid on aerial imagery, GIS layers or CAD drawings, as well as bed shear and stream power to predict erosion.

Floodplain Delineation and BFE's. Create linework (polygons, polylines) to submit to FEMA or other regulators showing the floodplain extent and Base Flood Elevation (BFE) contours.

Gridded Datasets. Export the results of your 2D analysis in GIS grid format for mapping/display in other software systems.

xpviewer and Animations. Help constituents to easily understand impacts of flooding with colorful animations. Share models without cost using xpviewer.

Evacuation Plans. Digitized evacuation routes can report location, duration and first cutoff for user specified depths, hazards and velocity.



EFFICIENCY

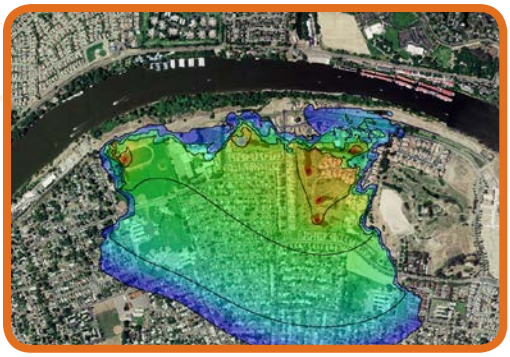
Your time is worth money. xp2D is optimized to help make the best use of your modeling time.

Integrated Interface. Anyone familiar with the xpswmm or xpstorm software will find that xp2D is completely integrated into the user interface, allowing easy addition of 2D modeling to any project.

Streamlined Model Setup. The streamlined model building workflow in xp2D will ensure that you spend your valuable time on critical work, while tedious or repetitive tasks are hidden and automated.

Easy 1D/2D Linkage. Connect 1D networks at inlets/manholes or along stream banks with only a few mouse-clicks.

GIS Integration. Dynamically link to almost any external database to build your model and populate model parameter fields. Streamlined linkage to ESRI databases and MapInfo databases allows you to take advantage of the GIS data without the limitations and cost of using a GIS software license.



WHY USE xp2d WITH xpswmm/xpstorm?

Accuracy. When it comes to flooding, accurate simulation and forecasting can save lives and property. A simulation model that can demonstrate how water moves over land, its timing, and how it interacts with its terrain as well as the existing system is essential in protecting lives, homes, businesses and municipal dollars. xp2D is FEMA approved and has been benchmark tested by the U.K. Environment Agency with excellent results.

1D/2D Integration. The combination of the 1D network flow with 2D surface flow uses the best description of the flow for each case – no need to use inadequate approximations. See how floodwaters on the surface interact with an existing river or pipe system. Watch as storm sewers surcharge, waters flow down streets or across land surfaces and either pool or re-enter the system.

Structures and Terrain. Model not only the land terrain but its hydraulic attributes. Objects in a model can include different types of land use, buildings, structures, dams, bridges, levees, fences, and more. Dynamic objects allow the simulation of failure.

Powerful Analysis. Using the powerful and well-accepted TUFLOW analysis engine coupled with the versatile xpswmm or xpstorm 1D analysis engine, xp2D solves the full 2D shallow-water equations on a finite-difference grid. This means that you will get accurate hydraulics answers, stable model runs, and fast run times – key requirements that must be balanced in a model suited for real-world use.

xp2D

Floods and storm tides cause extensive damage, stress, loss of life-and-limb, and dislocate communities. To fully understand and manage these risks requires a reliable hydrodynamic engine that accurately predicts flood inundation patterns. xp2D meets this challenge effectively and reliably.

xp2D gives you the power to analyze and predict potential flood extents, depth and velocity and accurately model the interaction of surface and underground systems in an integrated 1D/2D modeling environment. The software can also be effectively used to simulate and analyze tidal surges, dam breaks and breaches on sewer networks. xp2D is also an effective tool for the analysis and adaptation to resilient floodplains.

xp2D simulates the complex hydrodynamics of floods and tides using the full 1D St. Venant equations and the full 2D free-surface shallow water equations.

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