Simulating Leaks in Water Distribution Networks Using the EPANET-MATLAB Toolkit

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1. Within MATLAB, install a C/C++ compiler. For Windows OS, you can install the **MATLAB Support for MinGW-w64 C/C++ Compiler** provided by MathWorks. The easiest way to do this is through the "Get Add-Ons" tool from the "Home" toolbar.

2. Using the "Get Add-Ons" tool from the "Home" toolbar, install **OpenWaterAnalytics/EPANET-MATLAB-Toolkit** provided by Demetrios Eliades. This toolbox provides a simple way to access the EPANET simulation engine epanet2.dll through MATLAB commands.

3. Use the MATLAB script simulateLeaks.m to calculate the pressures in the different nodes of the WDN. The leak is simulated by increasing the water consumption (demand) in the leaky nodes by an amount equal to the leakage flow rate.

   Simulating Leaks in WDNs

   Syntax:

   ```
   >> [P,Y] = simulateLeaks(inpFile,node,leak);
   ```

   Examples:

   ```
   >> Hanoi = epanet('Hanoi.inp');
   >> Hanoi.plot('legendposition','best','nodesindex','yes')
   >> % Single leak of 40 l/s at node 5
   >> [P,Y] = simulateLeaks(Hanoi,5,40);
   >> % Multiple leaky nodes with different leakage magnitudes
   >> [P,Y] = simulateLeaks(Hanoi,1:31,10:10:80);
   ```

   You can download the MATLAB script simulateLeaks.m and the Hanoi configuration file from GitHub at https://github.com/isantosruiz/placement/releases.

4. Enjoy!