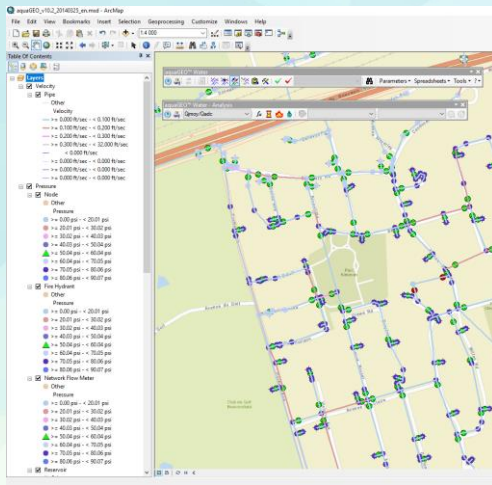




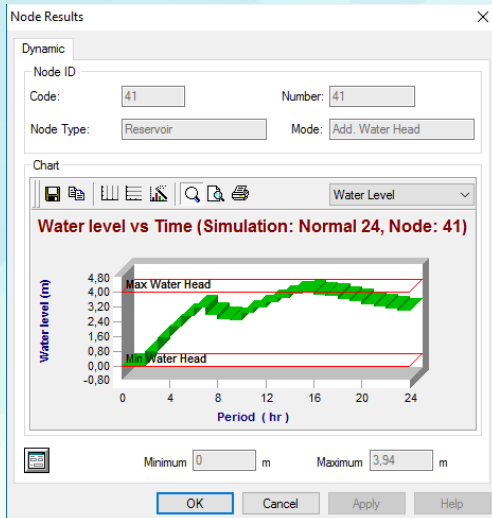
Hydraulic Modeling Module – Steady State Mode

ROLE

- Hydraulic modeling of a water distribution system in steady state, under determined operating conditions;
- Essential tool for various hydraulic analyses, including: current and future fire capacity, network extension, network vulnerability to water main breaks, optimization of pipe diameters, capacity to serve new users, etc.

ADVANTAGES

- Complete database of water distribution system elements including: pipes of all diameter, fire hydrants, watermain valves, check valves, pressure reducing valves, pumps, reservoirs, water meters, drain valves and air-relief valves;
- Management of pipe data inventory including: material, year of installation, year of rehabilitation, type of rehabilitation, theoretical or imposed C-factor;
- Hydraulic modeling based on theoretical C-factor or imposed by the user;
- Automated distribution of the consumption;
- Management of water demand scenarios and discern different types of users according to their consumption type;
- Simulation of different operation modes for valves, pumps and other control elements in order to manage different positions of the mechanism without changing their original position;
- Project scenarios, to take account of projected elements into a simulation and run the analysis on targeted and independent sectors;
- Flow-pressure scenarios for the comparative analysis of simulation results with field data for model calibration purposes;
- Visually display results and access via individual asset or through spreadsheets.



Hydraulic Modeling Module – Dynamic Mode

Complementary module to the Steady State Hydraulic Modeling Module

ROLE

- Hydraulic modeling based on 24 hour time period;
- Hydraulic analysis considering changes in water consumption over time and the operating condition of hydraulic elements of the water distribution system, such as the changes in reservoir water head and operation time of pumps.

ADVANTAGES

- Consumption diagrams for each consumer type over an extended time period;
- Definition of reservoir dimensions to determine water volumes available over time;
- Definition of the time interval for each analysis;
- Management of “actions” on the system according to “conditions” (ex.: start an additional pump at a certain time of day or at a certain flow level);
- Graphic results according to the time interval chosen to observe the pressure modulation, consumption, flow, speed, headloss, pump operation, and other pertaining results for each element;
- Results on thematic plan and graphical sequence of results as a function of time;
- Statistics of results with minimum and maximum values for each element.

Fire Protection Module

- Evaluation of the capacity of a water distribution system to provide required fire protection by determining available flow with a minimum residual pressure throughout the network;
- Identification of the fire capacity at each hydrant by comparing the available fire flow with the required fire flow;
- Colour display of results allowing the user to rapidly target vulnerable zones in the water distribution system;
- An essential tool for comparing intervention scenarios designed to improve network performance.

Flow-Through Time/Influence Zones Module

FLOW-THROUGH TIME ANALYSIS

- Evaluation of water age anywhere in the network by calculating the time it takes for the water to get from the source to consumption;
- Impose water age to a water head when water is provided by an external source;
- Identify water quality issues where water is stagnant.

INFLUENCE ZONE ANALYSIS

- Evaluate the water intake at each node throughout the water distribution system (ex.: WTP-01 40%, RESEV-01 60%);
- Target areas where water is provided by multiple water sources to identify potential water quality issues or the extent of contamination.

Chlorine Degradation Module

- Calculation of the chlorine degradation according to the water flow-through time and internal pipe condition and identification of pipes contributing to chlorine degradation;
- Simulation of scenarios to improve water quality.

Complementary modules to the Hydraulic Modeling module