SOME IMPORTANT DEFINITION

Needed Fire Flow—The flow rate required at the junction to meet fire flow demands. This value will be added to or replace the junction’s baseline demand, depending on the default setting for applying fire flows as specified in the Fire Flow.

Fire Flow Upper Limit—This input defines the maximum allowable fire flow that a junction can provide and the maximum allowable fire flow that can occur at any single withdrawal location. This is a user-specified practical limit that will prevent the program from computing unrealistically high fire flows at locations such as primary system mains, which have a large diameter and high service pressures. Remember that a system’s ability to deliver fire flows is ultimately limited by the size of the hydrant opening and service line, as well as the number of hydrants available to combat a fire at a specific location.

Residual Pressure—Minimum residual pressure to occur at the junction node. The program determines the amount of fire flow available such that the residual pressure at the junction node does not fall below this target pressure.

Minimum Zone Pressure—Minimum pressure to occur at all junction nodes within the Zone you are testing. The model determines the available fire flow such that the minimum zone pressures do not fall below this target pressure. Each junction has a zone associated with it, which can be located in the junction’s input data. If you do not want a junction node to be analyzed as part of another junction node’s fire flow analysis, move it to another Zone.

Minimum System Pressure—Minimum pressure allowed at any junction in the entire system as a result of the fire flow withdrawal. If a node’s pressure anywhere in the system falls below this constraint while withdrawing fire flow, fire flow will not be satisfied. A fire flow analysis may be configured to ignore this constraint.

Valve Status: A valve can have several different status conditions: Closed (no flow under any condition), Active (throttling, opening, or closing dependent on system pressures and flows), and Inactive (wide open, with no regulation).

Check Valve: Prevents water from flowing backwards through the pipe. In other words, water can only flow from the From Node to the To Node. Check valves are used to maintain flow in only one direction by closing when the flow begins to reverse. When the flow is in the specified direction of the check valve, it is considered to be fully open. Check valves are added to the network on a pipe element.

FCV: Flow Control Valves are used to limit the maximum flow rate through the valve from upstream to downstream. FCVs do not limit the minimum flow rate or negative flow rate (flow from the To Pipe to the From Pipe). These valves are commonly found in areas where a water district has contracted with another district or a private developer to limit the maximum demand to a value that will not adversely affect the provider’s system.

PRV: Pressure reducing valves are often used for separate pressure zones in water distribution networks. These valves prevent the pressure downstream from exceeding a specified level in order to avoid pressures that could have damaging effects on the system.

PSV: Pressure sustaining valves maintain a specified pressure upstream from the valve. Similar to the other regulating valves, these are often used to ensure that pressures in the system (upstream, in this case) will not drop to unacceptable levels.

PBV: Pressure breaker valves create a specified head loss across the valve, and are often used to model components that cannot be easily modeled using standard minor loss elements.

TCV: Throttle control valves simulate minor loss elements whose head loss characteristics change over time.

GPV: General Purpose Valves are used to model situations and devices where you specify the flow-to-head loss relationship, rather than using standard hydraulic formulas. GPVs can be used to represent reduced pressure backflow prevention valves, well draw-down behavior, and turbines.

Energy Grade Line (EGL): Sum of datum (base elevation), elevation, velocity head, and pressure head at a section.

Demand: Represents the total demand from an individual junction for the current time period.

Elevation: The distance from a datum plane to the center of the element. Elevations are often referenced with mean sea level as the datum elevation.

Energy Grade Line (EGL): Sum of datum (base elevation), elevation, velocity head, and pressure head at a section.