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(54) **Title:** DETERMINING BACKFLOW CONDITION IN WATER DISTRIBUTION SYSTEM

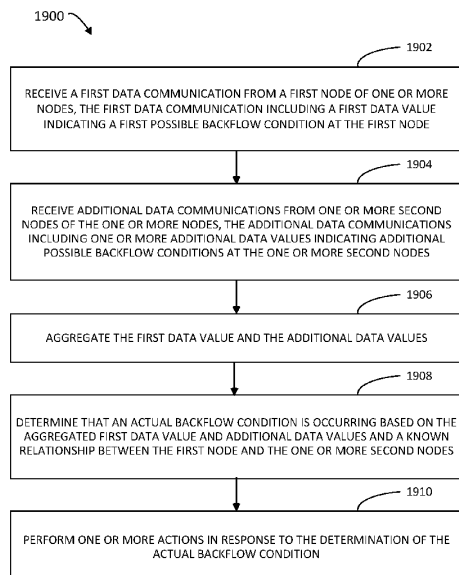


FIG. 19

(57) **Abstract:** A data collection device and method for determining a backflow condition in a water distribution system. The data collection device receives a first data communication from a first node, the first data communication indicating a first possible backflow condition at the first node. The data collection device receives additional data communications from one or more second nodes, the additional data communications indicating backflow conditions at the second nodes. The data collection device aggregates and analyzes the first data value and the additional data values and determines that an actual backflow condition exists based on the aggregated data values and a known relationship between the first node and the second nodes. The data collection device may then perform action(s) in response to determining the backflow condition, such as reporting the backflow condition, requesting updated reporting from the nodes, closing appropriate valves, initiating pumps to increase water pressure, flushing the system, etc.

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