

Isolation & Control Valve Solution Enables Accurate Flow Measurement to Provide Public Drinking Water

KEY RESULTS

- > Safe drinking water was supplied to citizens in need, while avoiding ecological and/or environmental damage.
- > Successful solids handling by knife gate valves provide an effective, long-lasting solution.
- > Segmented ball control valves proved effective at maintaining flow rates during seasonal rainfall variations.
- > Low power electric actuators enabled the use of solar power — reducing environmental impact.



Brook where water was diverted for use by nearby towns.

APPLICATION

Ecological flow measurement for a public utility and drinking water company in Colombia.

CHALLENGE

A public utility and drinking water supply company in Colombia needed to divert an exact amount of water from a brook, to convert it into drinking water for the small towns near the city — leaving the remainder free for the ecosystem. Bray helped the utility conduct a pilot test to verify that the ecological flow measurements would meet the required Colombian regulations. The pilot test was executed using a Parshall flume metering device to measure flow of surface water.

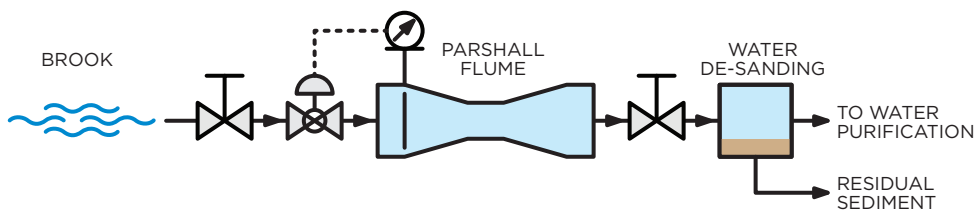
This scenario presented several challenges to overcome:

- > The brook produced variable flow rates, due to seasonal rainfall fluctuations.
- > The surface water contained sediment, including sand, silt, and other biological types of solids.
- > The remote, mountainous location would make it difficult to have constant field assistance or support from technical staff.
- > The remote location used solar panels to power the valves, requiring compact equipment with low power consumption needs.



Parshall flume metering device used to measure flow of surface water.

FLOW MEASUREMENT PROCESS



SOLUTION

Bray's field visit was essential to understanding the conditions and requirements for accurate surface water measurement. Because of the suspended solids in the water, and the brook's variable flow rates, Bray recommended a solution using two manually operated knife gate valves and an electrically actuated segmented ball control valve for modulating flow control.

Advantages of Bray Knife Gate Valve (Series 740)

- > Ideal for suspended solids and slurry applications.
- > Total bi-directional shutoff isolates the flow completely, avoiding accumulation of materials.
- > Reinforced elastomer seat assures extended service life in applications with solids.

Advantages of Bray Segmented Ball Valve (Series 19)

- > Precision modulating flow control in variable flow conditions, with rangeability greater than 300:1.
- > Shearing (or cutting) action at the leading edge of segment is ideal for fluids with suspended solids.
- > Low operating torque requirements allow economical, low-powered automation.

RESULTS

The year-long pilot test was completed successfully, providing **excellent measurement and mechanical performance**, with **no equipment or technical failures** experienced during the entire project.

Some of the remarkable results from this project include:

- > The citizens benefitted from drinking pure water, without causing ecological and/or environmental damage.
- > The passage of solids was blocked by the knife gate valves, preventing damage to the Parshall flume metering device.
- > Precision control provided by the Series 19 segmented ball control valves enabled accurate measurements from the Parshall flume metering device.
- > The use of smaller and more efficient actuators, such as Bray's Series 70 electric actuator, offer flexibility and reduced costs compared to actuators commonly used in the industry.

UPDATE

The project's success resulted in the customer replicating the solution for other brooks and streams, both in new projects and upgrades to existing designs with Bray solutions. For example, some actuators were equipped with torque limiters and space heaters to improve performance in high-humidity environments.

Bray continues to work with this customer, providing innovative solutions that meet their environmental challenges.

BRAY PRODUCT DETAILS

Application	Ecological Flow Measurement
Products	Series 740 Knife Gate Valve; EPDM Soft Seat; Stainless Steel Body; Manually Operated. Series 19 Segmented Ball Valve; Metallic Seat; Stainless Steel Flanged Body; Series 70 Electric Actuator.
Size Range	(Varies per Location) NPS 3, 6, 8, 10 DN 80, 150, 200, 250



Bray knife gate valves, segmented ball control valve, and electric actuator provided absolute shutoff and precision modulation.

To learn more about our full line of flow control solutions, visit Bray.com.