RUBICON™

Standalone Solution

Lupton Bottom provides consistent flows while freeing-up operator time

Situation

The headgates of Lupton Bottom's irrigation channel divert water from Big Dry Creek to supply over 20 irrigators. The water level in the creek can vary dramatically throughout the day because much of the water is supplied from treated municipal waste water. In order to maintain the flow required by the irrigators and not exceed the channel's allotted water right, an operator needed to make several visits to adjust the headgates throughout the day and night.

After the headgates were set, the operator checked the flow using a Parshall flume located downstream. The operator then made adjustments until the gates passed the desired flow rate.

The State of Colorado monitors the flows via a data logger and transmitter attached to the Parshall flume. This flow data, along with flow data from other Colorado irrigation districts, is posted on the state's website which kept Lupton Bottom Ditch Company's operations in the spotlight demanding high operator and management attention.

Solution

Rubicon implemented a Standalone Solution which involved replacing the manual headgates with automated FlumeGates®.

The FlumeGates combine flow measurement and precision flow control in a single device. They are solar powered so there was no need to bring electricity to the site. Volumetric usage is accumulated and backed up internally, allowing Lupton Bottom to download historical data through the FlumeGate's data interface or a local data logger.

And the FlumeGate's integrated telecommunications provide Lupton Bottom with an easy path to remote management and control in the future.

Automatic flow adjustment

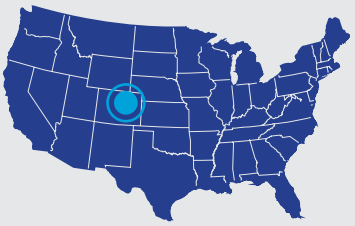
The operator now instructs the FlumeGates to maintain a constant flow rate and they automatically make opening and closing adjustments to deliver the flow, regardless of varying upstream water levels.

Each FlumeGate uses its integrated water level sensors and its precision manufactured gate leaf to calculate the flow passing through it to an accuracy better than ±2.5%*, exceeding the accuracy of the antiquated Parshall flume. The FlumeGate's high duty cycle motor drive mechanism makes immediate fine adjustments (to within ±0.5mm) to the gate position as soon as a variation from the programed flow rate is detected.

*Accuracy of FG-M-626-620 model verified by Manly Hydraulics Laboratory, August 2005

> "I no longer need to get up in the middle of the night or constantly visit during the day to make adjustments to our headgates. The FlumeGates adjust automatically, as the head changes."
>
> Rick Tkadlec, Channel Operator

USA
Fort Lupton, Colorado



Customer profile

Lupton Bottom Ditch Company, located in Fort Lupton, Colorado, manages a 30km long irrigation channel that includes three reaches. The company services more than 20 farmers that grow a mixture of high value vegetable crops over 1,600 hectares.

Solution components

Hardware

- FlumeGate x 2

Case Study

User interface

Each FlumeGate has a keypad interface that allows the operator to monitor set-points and flow rates, manually adjust gate position, or set a flow rate for the FlumeGates to maintain.

Results

After implementing Rubicon's solution, the number of required site visits has dropped significantly resulting in substantial labour savings. Now the channel operator visits the site only when downstream demand changes, not every time the upstream water level changes. Management is now confident of meeting the state's regulatory needs and more operator and management time can be focused on customer service and addressing other issues.

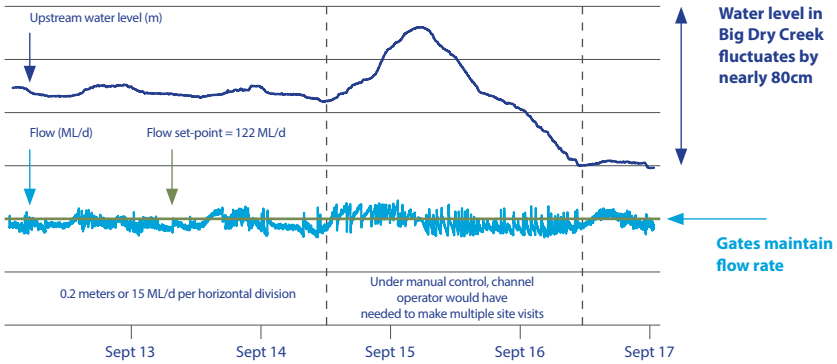
Flow rate maintained despite varying upstream water levels

Lupton Bottom is now able to automatically maintain required flow rate during periods of widely fluctuating upstream water levels. In the example shown below, the Lupton Bottom operator entered a flow set-point of 122 ML/day to accommodate irrigator requirements. During the five day period illustrated, the water level in Big Dry Creek fluctuated by nearly 80cm. The FlumeGates automatically reacted to the upstream water level changes to maintain the desired flow rate without the operator visiting the site.

Local interface pedestal

Keypad interface

Flow and upstream water level
(FlumeGate data 13/9/11 to 17/9/11)



> "After installing the FlumeGates, we no longer have the constant need to make adjustments and the end of our ditch is getting more consistent water deliveries."
>
> Corky Cantrell, General Manager, Lupton Bottom Ditch Company

> "Now I enter the cfs [flow rate] I need and within minutes I get that flow through the headgates. I no longer have to wait for it."
>
> Rick Tkadlec, Channel Operator, Lupton Bottom Ditch Company

About Rubicon Water

Rubicon Water delivers advanced technology that optimises gravity-fed irrigation, providing unprecedented levels of operational efficiency and control, increasing water availability and improving farmers' lives.

Founded in 1995, Rubicon has more than 25,000 gates installed in TCC® systems in 15 countries.

CS-LBSS-11/17-AU

1 Cato Street
Hawthorn East
Victoria 3123
Australia

Tel: +61 3 9832 3000
Fax: +61 3 9832 3030
enquiry@rubiconwater.com