

# Network Control Solution

## Case Study

### Naches-Selah automates a complex canal system and improves delivery reliability and safety

*"Rubicon's Network Control has time and time again shown consistent ability in responding to routine and extreme conditions in a complex conveyance system that challenges all canal operators."* Justin Harter, District Manager, Naches-Selah Irrigation District

#### Situation

The Naches-Selah Irrigation District's steep terrain and ageing manually operated canal system made it challenging to operate. The district has steep canals (with slopes of up to 1:500) and a variety of conduits are incorporated into the main canal, including elevated flumes, tunnels and siphons.

In addition, with no formal water ordering system and a number of large water users, demand is always unpredictable. It was difficult for canal operators to react quickly enough to water user demand, to make the frequent manual gate adjustments needed to maintain pool levels. This resulted in the risk of water over-topping canal banks or pools being drained. Large canal water level fluctuations and spills were common.

NSID developed an improvement plan to upgrade critical infrastructure and make the system easier and safer to operate while improving supply reliability and reducing spills. A gravity flow waste pipeline and a regulating reservoir to pump extra water into the canal during high demand periods were both rejected as being too costly to construct or run. Eventually the plan settled on the automation of the district's main canal.



Elevated wood flume



Entrance to one of five tunnel sections along the main canal

#### Solution

NSID began their automation journey with Rubicon in 2007 with a Site Management solution, which involved installing FlumeGates™ along their main canal and remotely operating them using SCADAConnect® software. With remote operation, changes could be made much more frequently and safely, which resulted in significant service improvements.

However, the large, unplanned changes in delivery flows by users meant that gates still needed operator attention 24 hours a day, albeit through SCADAConnect. So NSID sought a higher level of automation to improve performance and manageability to deal with the unpredictable demand. With network capabilities built into the existing FlumeGates, implementing a Network Control solution along eight miles of the main canal was a relatively simple upgrade, which included installing six additional FlumeGates.



## USA



Yakima County, Washington

### Customer profile

Naches-Selah Irrigation District (NSID) is an 11,000 acre irrigation district located in the north Yakima County, adjacent to the communities of Naches and Selah, Washington. NSID manages a 120 year old system with a mix of open canal and pipe networks. NSID diverts 50,000 acre feet per year to support over 1,700 landowners growing crops such as apples, cherries, pears and hay.

### Solution components

#### Software



SCADA  
CONNECT



NEUROFLO



NETWORK  
VISUALIZATION

#### Hardware



FLUMEGATE



RADIO  
NETWORK

- FlumeGate x 13
- Radio nodes/repeaters x 1
- Level monitoring sites x 3

#### Services

Installation, gate calibration and commissioning, operational training and basic maintenance training.

# Network Control Solution

## Case Study

### Managing a complex canal system

FlumeGates at check structures along the main canal now use NeuroFlo® control software to automatically coordinate with each other and adjust continually, providing a degree of responsiveness that remote operation by canal operators cannot match.

Network Control performs well with NSID's hydraulically complex canals because Rubicon engineers configured NeuroFlo® control software to incorporate the dynamics of each pool, flume, conduit, tunnel and siphon controlled by a FlumeGate. Rubicon configured a mathematical model of the canal and then calibrated the model using data gathered by measuring the real-world behavior of water in that canal. The result is that the FlumeGates' responses are tailored to the canal element that they are checking. This process addresses the difficulties normally associated with automating canals with highly variable dynamics.

Now canal operators set the desired water levels along the main canal and NeuroFlo automatically ensures that they are maintained.

### Results

After NSID implemented Network Control in 2012, water users immediately noticed improvements in the reliability of flows through their turnouts, which meant that they could irrigate more productively. Even without advance notice of withdrawals, Network Control can ensure that there is enough water in the system to meet demand and maintain desired water levels generally within  $\pm 1$  inch.

Canal operators no longer have to be immediately available to make check gate adjustments 24 hours a day in order to ensure a reliable service, which has had a significant impact on the lifestyle of NSID staff. The risk of water overtopping canal banks, pools draining and spills are worries of the past.

### About Rubicon Water

Rubicon Water delivers advanced technology that optimizes 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 10,000 gates installed in TCC systems in 10 countries.



Each FlumeGate's responses are tailored to the canal they are checking



Network Control performs well in hydraulically challenging environments

### Results summary

- Management of a complex system has been simplified
- Immediate service improvements
- Canal water levels maintained generally within  $\pm 1$  inch
- Improved safety and lifestyle for operators



Justin Harter, District Manager

*"Rubicon's Network Control solution enables NSID to operate a complex system safely. And with constant control of canal levels, we have eliminated the farms' worry of service interruptions."*

Justin Harter, District Manager,  
Naches-Selah Irrigation District

**Rubicon Water**  
4563 Denrose Court  
Fort Collins, CO 80524

Tel: +1 970-482-3200  
Fax: +1 970-482-3222  
Email: [inquiry@rubiconwater.com](mailto:inquiry@rubiconwater.com)

**Rubicon Water**  
615 Kansas Avenue, Unit B  
Modesto, CA 95350

**Rubicon Water**  
612 South J Street, Suite 7  
Imperial, CA 92251

© Rubicon Research Pty Ltd 2012

RUBICON logo and FlumeGate, NeuroFlo, SCADAConnect, Total Channel Control and TCC are trademarks and service marks, or registered trademarks and service marks of Rubicon Research Pty Ltd or its affiliates in Australia, the United States of America and other jurisdictions. Systems, components, methodologies and software supplied by Rubicon Research Pty Ltd may be the subject of patent and design rights in Australia and elsewhere.



  
**RUBICON™**  
[www.rubiconwater.com](http://www.rubiconwater.com)