



# How a Water Treatment Utility Improved Reliability

Learn how water wastewater facilities reduced wrong or significantly slow alarms by using alarm notification software to protect assets and customers.

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Located in British Columbia, Canada, the Comox Valley region is home to 75,000 residents. The townships of Comox, Courtenay and Cumberland reside in the valley, which stretches from the mountains to the sea. The Comox Valley Regional District (CVRD) serves the water and wastewater needs of this community.

The Comox Valley wastewater utility includes the Comox Valley Water Pollution Control Centre, the sewage treatment facility, and wastewater collection systems.





The water utility includes a new water treatment plant that went online in 2021 (see **Figure 1**). It also includes many distribution facilities and two other water treatment plants.

In total, the CVRD manages three water treatment plants, five booster pump stations and 10 reservoirs and

associated facilities, and oversees 18 miles (33.6 km) of pipe within the transmission and distribution system.

For wastewater treatment and collections, the CVRD manages two wastewater treatment plants, five sewage pump stations and 18.6 miles (30 km) of sewer lines.

James Dawe, manager of IT Infrastructure and Operations, and Stone McCauley, senior control systems technician, oversee the water and wastewater utilities' control systems and instrumentation, which include programmable logic controllers (PLCs), supervisory control and data acquisition (SCADA), variable-frequency drives (VFDs) and alarms.

To help make sure the utilities didn't experience unplanned downtime and issues were responded to quickly, CVRD worked with a small, third-party alarm monitoring service. CVRD's control systems connected into this service using keypads, which also included a hard-wire telephone line to a centralized location that alerted a person who then paged and called the on-call operators.

This served their needs for a while, but when the company was purchased, problems began with pages and alarms being sent to the wrong locations and incorrect utility.

Then when a power failure occurred at their new water treatment plant and

the on-call operator didn't receive a page for more than an hour and the clear well plummeted, everyone knew it was time for a change. McCauley received approval to find a new alarm notification software company.

### Improved Monitoring

The new water treatment plant has a raw water pump station that pumps water from Comox Lake. The SCADA system monitors four 150-hp pumps, level, pressure, flow, turbidity, UV transmittance (UVT), pH and temperature.

The main plant has similar instrumentation to provide a secure supply of safe, high-quality drinking water by monitoring and controlling systems such as flash mixing, flocculation, filtration, caustic, coagulation, chlorine, UV disinfection, clear wells, solids dewatering and associated equipment.

The wastewater SCADA system is key to the operation, monitoring instrumentation measuring level, pressure, liquid flow, air flow, dissolved oxygen, total suspended solids (TSS), pH, oxidation-reduction potential (ORP) and temperature.

SCADA and the instrumentation also help monitor and control equipment and systems such as headworks, grit and sludge removal, bioreactors (see **Figure 2**), aeration, return- and waste-activated sludge (RAS/WAS), solids dewatering, scrubbers, chemical systems and sewage pump stations.

### SCADA and Remote Alarm Notification

The wastewater treatment facility and collection systems were the first CVRD facilities to integrate the new remote alarm notification software with their existing SCADA system. CVRD management chose WIN-911 Software for the upgrade. This alarm system is from WIN-911, a Technology Partner in the Rockwell Automation PartnerNetwork™ program.

McCauley supervised, assisted by Dawe, along with feedback from operations, to configure servers and set up networks. Each utility has its own physical server and a specific virtual server running the remote alarm notification software, which connects to a FactoryTalk® View SE SCADA platform from Rockwell Automation (see **Figure 3**).

The utilities use a severity functionality through the FactoryTalk Alarm and Events feature of FactoryTalk View SE to organize and manage the alarms.



**Figure 1.** The new water treatment plant has a raw water pump station that pumps water from Comox Lake.







**Figure 2.** The Comox Valley Regional District's bioreactors are just one of the many pieces of equipment its SCADA system monitors.

McCauley sets the appropriate alarm severity within the SCADA system and creates a subscription to monitor and respond to that severity.

For example, one called "all alarms" is essentially everything, others call out specifics, and communication alarms are exclusively for control systems staff. The alarms are sent to on-call operators, controls systems staff, and managers.

The remote alarm notification software supports numerous alarm notification methods. CVRD operators use paging via email notifiers and voice calls, which is their primary means of notification to acknowledge and stop alarm escalation. Texts are sent if an alarm remains active and unacknowledged.

Another form of notification is the mobile app. Because all alarms go to the app, an operator can receive the call, open the app, check the alarm details and proceed accordingly.

### How It Works

When CVRD first installed the software, it ran parallel to the previous

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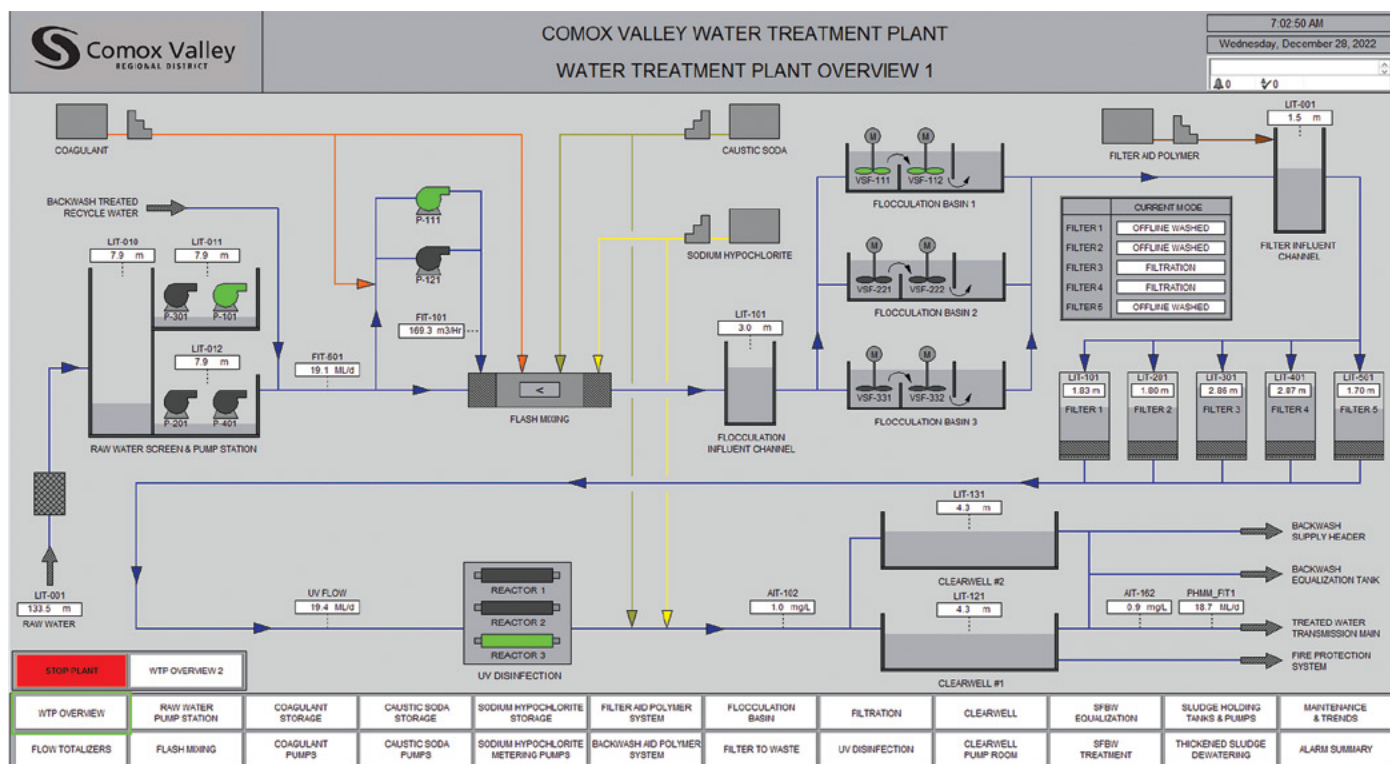
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**Figure 3.** The SCADA system monitors four 150-hp pumps, level, pressure, flow, turbidity, UVT, pH and temperature, and an array of other equipment and instrumentation.

notification system to ensure alarms weren't missed. And the differences between the two software programs were immediately evident. An incident occurred in which the operator received and acknowledged the alarm from WIN-911, rectified the issue, and got the plant back up and running.

After doing all this — while driving home — he received notification from the other alarm company about *45 minutes* after receiving the alarm.

CVRD's utilities experience alarms every night to which operators respond. But with the new system, McCauley has only experienced one page that inadvertently didn't come through.

"One of the best benefits of integrating this remote alarm notification software is its configurability," he says. "I can create any alarm callout and through notification policies or subscriptions, I can specify the kinds of alarms, which ensures the right message gets to the right personnel at the right time."

McCauley and his team like the software's Operator Workspace that's implemented on a computer at the water treatment plant for the crews. This allows senior team members to easily change the callout notification by logging onto a computer and altering whoever is on call.

"This remote alarm notification software helps protect our plants and resolve problems before they impact our customers," McCauley observes. "Ever since we integrated this new software with our SCADA system, we've had virtually 100% reliability." ●

**WIN-911 SOFTWARE** Based in Austin, Texas, WIN-911 has offices in Europe, Mexico and China, and a global network of authorized distributors and system integrators. The company provides machine alarms via smartphone or tablet app, voice (VoIP and analog), text, email and announcer to reduce operator response times, system downtime and maintenance costs.