

Technology Critical to Comox Valley Water and Wastewater Treatment Plants

**LOCATION**

British Columbia, Canada

INDUSTRY

Water & Wastewater Treatment

WEBSITEcomoxvalleyrd.ca**CHAMPION**

Stone McCauley

Located on Vancouver Island, British Columbia, Canada, the Comox Valley is home to 75,000 people. The townships of Comox, Courtenay and Cumberland make up the Valley that stretching from mountains to sea. Serving the water and wastewater needs of this community is the Comox Valley Regional District (CVRD).

Comox Valley Regional District British Columbia, Canada

The CVRD control system department is led by James Dawe, manager of IT Infrastructure and Operations and Stone McCauley, senior control systems technician, who support teams of technicians and operators. McCauley and Dawe oversee and manage 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.

Resiliency challenges

To help ensure the utilities didn't experience any unplanned downtime and issues were responded to accordingly, CVRD worked with a small, third-party alarm monitoring service. CVRD's control systems tied into this service using keypads at the facilities, which also included a hard-wire telephone line that went back to a centralized location that alerted a person who then paged and called the on-call operators. This served their needs for a while, however, when the company was bought out, problems began with pages and alarms being sent to the wrong locations and incorrect utility. When a power failure occurred at their new water treatment plant, and the on-call operator didn't receive a page for over an hour and the clear well plummeted, everyone knew it was time for a change.

McCauley received the green light to proceed with switching alarm notification software companies. He was familiar with WIN-911 software from his previous work at other regional districts and saw the myriad benefits it provides.



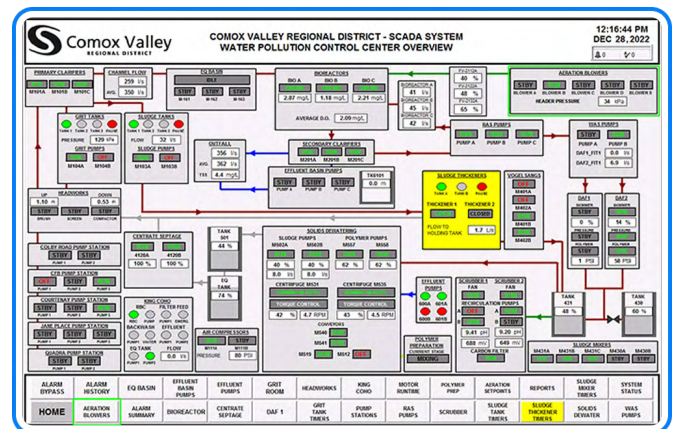
CVRD's new water treatment plant has a raw water pump station that pumps water from Comox Lake. The SCADA system monitors four 150hp pumps, level, pressure, flow, turbidity, UVT, pH and temperature.

Source: Comox Valley Regional District

CVRD utilities and IT

The Comox Valley wastewater utility includes the Comox Valley Water Pollution Control Centre, the sewage treatment facility, and wastewater collection systems. The Comox Valley water utility includes a new water treatment plant that, after years of planning and construction, went online in fall 2021. The water utility also includes many distribution facilities and two other water treatment plants. The wastewater treatment facility and wastewater collection systems were the first CVRD facilities to integrate SmartSights WIN-911 with their existing SCADA system. McCauley oversaw this with the assistance of Dawe and the feedback from operations to configure servers and set up networks.

For the community's water treatment and distribution, the CVRD manages three water treatment plants, five booster pump stations, 10 reservoirs and associated facilities, and oversees 33.6km of pipe within the main service area's transmission and distribution system. For wastewater treatment and collections, the CVRD manages two wastewater treatment plants, five sewage pump stations and 30km of sewer lines.



CVRD's wastewater treatment plant FactoryTalk SCADA Overview, which displays the mission-critical equipment being monitored.

Source: Comox Valley Regional District

SCADA and WIN-911

Each utility has its own physical server and a specific virtual server running the remote alarm notification software, which connects to Rockwell Automation FactoryTalk™ View SE SCADA platform.

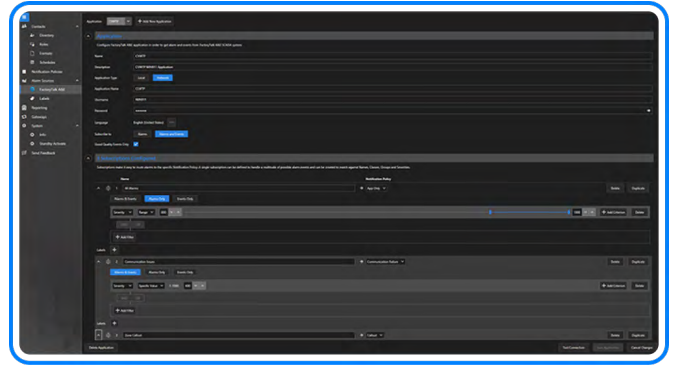
The utilities use a severity functionality, meaning the alarm management is implemented through FactoryTalk Alarm and Events, which organizes the alarms that McCauley wants to call out. He sets the appropriate alarm severity within the SCADA system and then creates a subscription that monitors that specific severity and what should be done about it. For example, one called “all alarms” is essentially everything; there are others that call out specifics, and communication alarms that are exclusively for control systems staff. The alarms are directed to on-call operators, controls systems staff, and managers.

SmartSights WIN-911 supports numerous alarm notification methods. CVRD leverages paging via email notifiers; voice calls, which is their primary means of notification, and the team uses this for acknowledgement and to stop alarm escalation; texts are sent if an alarm remains active and unacknowledged; and the WIN-911 mobile app is utilized as an all-encompassing piece of information. Because all of the alarms will go to the app, an operator will receive the call, but can then go into the app, check out the alarm details and proceed accordingly.

Monitoring capabilities

The new water treatment plant has a raw water pump station that pumps water from Comox Lake. The SCADA system monitors four 150hp pumps, level, pressure, flow, turbidity, UVT, pH and temperature. The main plant also has similar instrumentation that helps monitor and control systems such as flash mixing, flocculation, filtration, caustic, coagulation, chlorine, UV disinfection, clear wells, solids dewatering, and all of their associated equipment. Using filtration, chlorination and UV disinfection removes the risks of viruses and bacteria from drinking water and provides a secure supply of reliable, high quality drinking water.

The wastewater SCADA system monitors many pieces of equipment as well as instrumentation including level, pressure, liquid flow, air flow, dissolved oxygen, TSS, pH, ORP, and temperature. All of the instrumentation helps monitor and control systems such as headworks, grit and sludge removal, bioreactors, aeration, RAS, WAS, solids dewatering, scrubbers, chemical systems, as well as all of the sewage pump stations.



WIN-911 remote alarm notification software seamlessly integrates with CVRD's SCADA system, Rockwell Automation FactoryTalk Alarms & Events.

WIN-911 in action

When CVRD first installed SmartSights WIN-911, it ran parallel to the previous notification system to ensure alarms weren't missed. But the differences between the two software programs was immediately evident. An incident occurred in which the operator was able to receive and acknowledge the alarm from WIN-911, rectify the issue, and get the plant back up and running. After doing all this and on his drive home—approximately 45 minutes after receiving the WIN-911 alarm—he received notification from the other alarm company.

CVRD's different utilities experience alarms every night to which operators respond. But now, thanks to WIN-911's robust, technologically advanced software, McCauley has only experienced one page that inadvertently didn't come through.

CASE STUDY

“One of the best benefits of integrating SmartSights WIN-911 alarm notification software is its configurability,” said McCauley. “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 continued.

McCauley and his team really appreciate the software’s Operator Workspace that is implemented on a computer at the water treatment plant for the water treatment and distribution crews. This feature allows senior team members to easily change the callout notification by logging onto a computer and altering who is on-call.

“WIN-911 helps protect our plants and resolve problems before they impact our customers,” commented McCauley. “Ever since we integrated this software with our SCADA system, we’ve had virtually 100 percent reliability from WIN-911,” McCauley added.



Notification policies create and configure alarms in WIN-911. They can be based on a simple call out list, or highly sophisticated to dynamically respond to changes in actual conditions. Alarm messages sent via push notification to smartphones shown.

Mobile app push notifications lets the Comox team quickly see what is wrong, send an acknowledgment, and monitor alarm condition changes in real-time, right from their smartphones.

Whether on the road or at the office, McCauley and his team quickly see who has acknowledged an alarm in the Alarm History Tab. And since events stay on the system for up to 31 days, they have an accurate and detailed event log ready to review at team meetings.

