

**Project:** Low Cost, Remote, Irrigation Delivery System Control and Monitoring  
**Client:** Cub River Irrigation  
**Location:** Franklin, Idaho  
**Year:** 2000

### Application Notes:

The Cub River Irrigation District manages about 40 miles of canals in the Southeastern most part of Idaho. The canal system has two main diversions. One diversion (Upper) is located about 15 miles up a canyon and takes water from the Cub River into the Irrigation Districts canal system, the second diversion (Lower) is about 25 miles down stream where a pump station lifts water from the Bear River into the same canal system. At the Lower diversion the water from the Cub River and the water lifted from the Bear River join and are diverted into two other canals. The district personnel wanted to be able to have the system automatically raise and lower the gates at these two diversion points as necessary to maintain the flows that they needed downstream. They also wanted to be able to remotely monitor and control the conditions at each of the diversions.



*Lower Diversion. Bear River water enters from the top, Cub River water enters from the right, and the combined water is then diverted to canals on the left and bottom. The white PVC pipe on the left of the canal houses an ultrasonic distance sensor.*

### Installation and System Design:



*Fiberglass Instrument Shelter at the Lower Diversion. This shelter house the Measurement and Control Unit and power supply.*

Each diversion was instrumented in a similar way. A fiberglass instrument shelter was installed on a concrete pad. Inside the shelter a bank of rechargeable batteries was installed. At the upper diversion a generator is used to occasionally charge the batteries. At the lower diversion, AC power was run through a charging regulator to charge the batteries and to provide power to the measurement and control system.

A CR10X Measurement and Control System was also installed in the instrument shelter and is used to measure the water level in the canals using SD71 Ultrasonic Distance sensors. The water level measurements are converted into flow measurements. Using a local CR10KD Keypad and Display or a remote computer via phone or cell phone the operator can set the desired flow rate for any particular canal. The CR10X will control the position of various gates by interfacing with the gate actuators that are installed on each gate that is to be automatically moved up or down.

The operator can also check the current conditions at either site at any time by calling into the site with a phone or cell phone. The CR10X at the upper diversion is interfaced with a COM100 Cellular Phone Package with a COM300 Voice Synthesized Modem. At the lower diversion, a COM300 is connected to a direct phone line.

Through the use of this automated control system the delivery system operator can save several hours a day and a lot of gas by not having to drive back and forth to the two diversions to manually adjust the gates. The system remains more stable throughout the day, which helps the downstream users to be able to better meet their irrigation demands.

The system also has built in alarm functions. The operator can set alarm values for high flow, low flow, and gate stuck conditions. If any of these occur the system has the ability to call out the alarm to as many as eight phone numbers.



*The CR10X Measurement and Control Unit, CR10KD Keyboard Display, and the COM100/COM300 Cellular Phone and Modem are mounted to the side of the shelter at the Upper Diversion site.*

For Information on this project or these products please contact:

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