

COLORADO SDR FLOW MONITORING PROJECT



2009

BACKGROUND

In order to comply with a Supreme Court ruling and changes in legislation, the Colorado DWR developed a plan for recharging and accounting for water rights. The new plan relied heavily on tracking and accounting for water use. To assist in this daunting task of data processing, the DWR, in cooperation with Lower South Platte District and Northern Colorado Water Conservancy District, embraced the use of data loggers to automate the collection and processing of diversion data. Data loggers have been paired with cell phones and Satlink2 GOES Satellite Transmitters to facilitate real-time data acquisition day or night. Sutron's SDR (Stage Discharge Recorder) was selected based on its ability to act as both a shaft encoder and a data logger. Over 250 SDRs have been deployed in locations administered by Colorado DWR District 1 and 64. The locations range from stand alone SDR's to SDR paired with various telemetry.

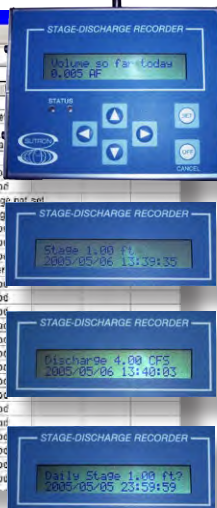
After comparing data loggers and sensors from a variety of manufacturers, the DWR chose Sutron's Stage Discharge Recorder to be the core of the entire project.

Since 2005 the Colorado DWR has expanded the Flow Monitoring Project upstream on the South Platte and up the tributaries. Every major ditch diversion from Denver to Julesburg on the main stem has either a High Data Rate Goes Radio or an SDR with a cell modem. District 5 (St. Vrain Creek) was completed this year, with the final objective being to monitor every major ditch diversion in Division 1 using an SDR.

The ease of programming the SDR and the ability to download the data into an Excel spreadsheet make it a very useful tool, with no charts to work! With the use of SDRs, staff hope to provide better service to the water users and better administer Colorado's most valuable resource.



name	date	time	value	units	qual
Reset Powerup	4/26/2005	9:53:33			Good
Display Off	4/26/2005	9:59:34			Good
Stage	4/26/2005	10:00:00	4.75 #	Stage	Good
Discharge	4/26/2005	10:00:00	24.00 CFS	Stage	Good
Setup Change	4/26/2005	10:01:43			Good
Time Before Change	4/26/2005	10:01:47			Good
Time After Change	4/26/2005	10:01:40			Good
Before Cal	4/26/2005	10:01:45	4.75	Over	Good
After Cal	4/26/2005	10:01:45	1.5	Good	Good
Stage	4/26/2005	10:30:00	1.5 #	Good	Good
Discharge	4/26/2005	10:30:00	0 CFS	Good	Good
Stage	4/26/2005	11:00:00	1.5 #	Good	Good
Discharge	4/26/2005	11:00:00	0 CFS	Good	Good
Stage	4/26/2005	11:30:00	1.5 #	Good	Good
Discharge	4/26/2005	11:30:00	0 CFS	Good	Good
Stage	4/26/2005	12:00:00	1.5 #	Good	Good
Discharge	4/26/2005	12:00:00	0 CFS	Good	Good
Stage	4/26/2005	12:30:00	1.5 #	Good	Good
Discharge	4/26/2005	12:30:00	0 CFS	Good	Good
Stage	4/26/2005	13:00:00	1.5 #	Good	Good
Discharge	4/26/2005	13:00:00	0 CFS	Good	Good
Stage	4/26/2005	13:30:00	1.5 #	Good	Good
Discharge	4/26/2005	13:30:00	0 CFS	Good	Good



SDR FEATURES

- ▶ Dual Sensor: Setup SDR to measure a second stage using an analog* or SDI-12 sensor
- ▶ Compute discharge using a RATING TABLE (up to 50 pts)
- ▶ Stage can be computed by AVERAGING multiple samples over a user-set period
- ▶ Output stage or discharge using the 4-20mA circuit
- ▶ SITES with or without STILLING WELLS
- ▶ GROUND WATER MONITORING
- ▶ Records DISCHARGE ON CANALS, DITCHES, TURNOUTS,
- ▶ Runs all year on 2 LANTERN BATTERIES
- ▶ LOG FILE DOES NOT ERASE.
- ▶ SIMPLY ENTER FLUME/WEIR FORMULA
- ▶ 2 YEARS OF DATA STORAGE

DISPLAYS

- ▶ Stage - Daily & Log
- ▶ Volume So Far Today
- ▶ Flow
- ▶ Discharge
- ▶ Review Discharge by Day

OWNER: State of Colorado Division of Water Resources

PROJECT: Perform & record accurate water level measurements in a digital format on a regular, uninterrupted basis over long periods of time. Provide accurate, efficient systems for Colorado DWR staff to collect stage - discharge data from public & private water users, directly from the field to a digital format either by direct download or telemetry.

DATES: 2005 with on-going expansion

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VALUE: To date 2009 @\$325,000 +

TELEMETRY: All major ditch diversions have either a Sutron Satlink2 GOES Transmitter or Raven Cell modem

LOGGING SENSOR: 250+ SDR Colorado Packages (SDR with wheel, float, chain & counterweight.)