STATE OF COLORADO

Colorado Water Conservation Board
Department of Natural Resources
1313 Sherman Street, Room 721
Denver, Colorado 80203
Phone: (303) 866-3441
Fax: (303) 866-4474
www.cwcb.state.co.us

TO: Colorado Water Conservation Board Members

FROM: Jeff Baessler
Stream and Lake Protection Section

DATE: November 7, 2009

SUBJECT: **Agenda Item 23, November 16-18, 2009 Board Meeting**
Stream and Lake Protection – State of Colorado Stream Gaging Programs

Summary

This is an informational memo that explains the purpose of the CWCB and Division of Water Resources (DWR) stream gaging programs. In addition, this memo outlines the non-reimbursable funds that have been requested to support the ongoing operation of the programs as well as the collaborative efforts between CWCB, DWR and the USGS that are aimed at strengthening stream gaging data collection throughout the state. No Board action is necessary.

Discussion

There are approximately 785 stream gaging stations currently in operation throughout Colorado. Approximately 500 of these stations are operated and maintained by the DWR, with the remaining 285 run by the USGS. Most of these stations relay real-time data to users via satellite telemetry. In general, USGS gages are used to collect water data for long-term scientific purposes. However, the USGS also provides stream gaging services for multiple uses to water users throughout Colorado via its Cooperative and National Streamflow Information Programs. On the other hand, DWR's stream gaging program, known as the Satellite-linked Monitoring System, is critical to DWR's mission to provide for the administration and distribution of water in accordance with the State's prior appropriation system.

As the state's water planning agency, the CWCB relies upon gages operated by DWR and USGS, as well as private entities, to meet the needs of its mission-critical program areas, including compact compliance, stream and lake protection, decision support system modeling, floodplain management, drought monitoring and water conservation. However, DWR and USGS gages are not always located where the CWCB needs them, nor are they necessarily designed to fit CWCB data collection parameters. Because of this, CWCB developed its own stream gaging program beginning in 2002 to ensure that CWCB stream gaging needs would be met. Although designed to ensure the collection of

gage data for its own purposes, CWCB's gaging program works in collaboration with both the USGS and DWR to strengthen water data collection efforts throughout the state for all water users.

Collectively, both the CWCB and DWR gaging programs focus on the following elements:

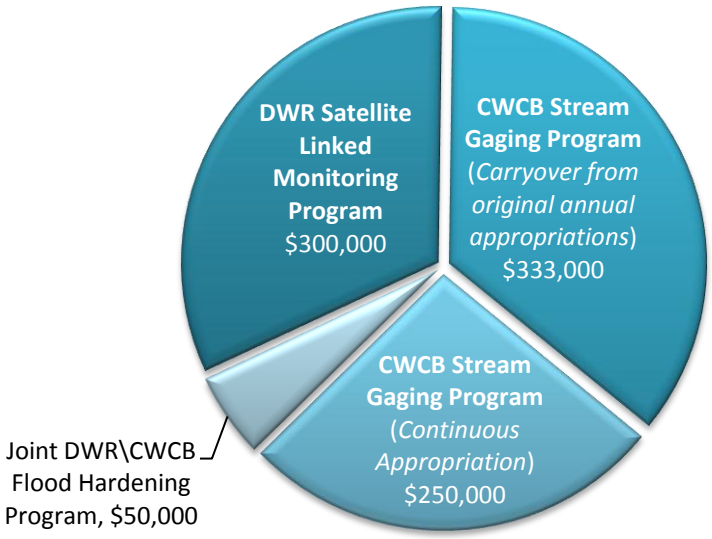
1. Collaborate with the USGS to review statewide stream gaging efforts, address potential problems, prevent the loss of critical gages with long term records, and discuss strategies to improve stream gage data collection and distribution while preventing redundancy.
2. Maintain compliance with new satellite remote sensing technologies through the ongoing Satellite-Linked Monitoring System refurbishment and replacement program.
3. Implement new stream gaging methodologies through research and advances in technology.
4. Improve existing stream gage infrastructure to ensure safe high flow measurement capability as well as harden existing gages against high flow events.
5. Install and collaborate, when possible, on new gages required for CWCB and/or DWR programs.
6. Seek out other cooperators to help install and fund the ongoing operation and maintenance of state-operated stream gages.
7. Upgrade and maintain gaging and survey equipment as well as computer hardware and software required for stream gaging data collection and analysis and for the flow alert system.
8. Provide ongoing staff training related to stream gaging technologies.

FUNDING

Since 2002, the CWCB and DWR have jointly asked for a total annual appropriation of approximately $600,000 of non-reimbursable funding from the Construction Fund to finance the State's stream gaging programs. Out of this total, $300,000 was appropriated specifically for the Satellite-Linked Monitoring System and $250,000 was appropriated for CWCB stream gage projects. In addition, $50,000 was appropriated on an annual basis for the State's flood hardening program, which is jointly managed by both CWCB and DWR.

When CWCB started its stream gaging program in 2002, it began requesting non-reimbursable funds to support the program, but was unable to encumber all of the funds on a yearly basis due to FTE limitations and resultant delays in the installation of gages necessary to meet CWCB needs. As a result, unspent funds were rolled into the following year with the goal of eventually installing the identified gages, or funding other agency stream gage related projects. This original CWCB gaging fund currently has an unencumbered balance of approximately $333,000. Rather than continue to request yearly gaging funds, in 2006, staff requested and obtained a continuous appropriation from the Construction Fund that is refreshed on an annual basis up to $250,000 to meet CWCB's stream gaging needs. Unused funds from this continuous appropriation revert back to the Construction Fund. In addition, CWCB began developing a legislative decision item that would provide the CWCB with a full time hydrographic FTE to fully implement its gaging program. The legislature approved the decision item in 2008, but due to the state hiring freeze, this FTE was not hired until September 2009.

The following chart identifies Construction Fund dollars allocated to state stream gaging programs for FY 2009-2010.



Below is a draft spending plan to address CWCB's current identified gaging needs. Funding for these projects will initially be taken from the $333,000 carryover from previous years. Remaining projects will be funded from the CWCB's continuous appropriation in 2009-2010 or from subsequent year funding from this appropriation. CWCB staff is currently developing a hydrographic strategic plan and working with stakeholders to refine this spending plan.

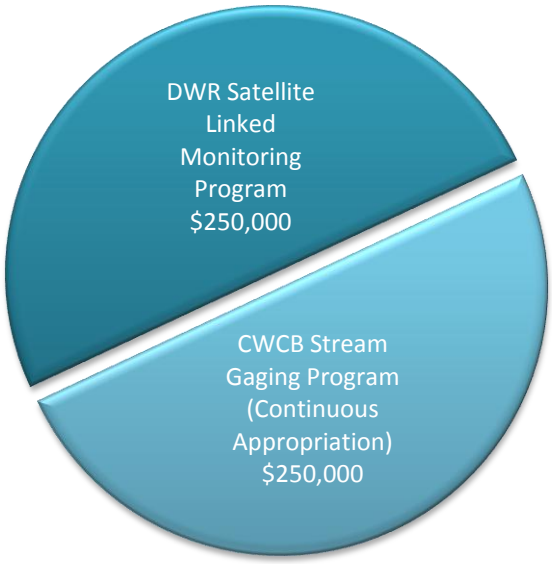
Item	Cost	Quant.	Total	Comments
Hydrographic Program Operational Costs	15,000	1	$ 15,000	Travel, training, and coordination meetings
Funding of USGS Cooperative gages	14,000	3	$ 42,000	Until other cooperators can be found when gages abandoned by USGS. i.e.: San Miguel River near Placerville, Elk River near Milner.
Operation and Maintenance of Existing CWCB gages	8,000	3	$ 24,000	Snowmass Creek, Crystal River, Blue River
Installation of new CWCB Satellite Gages	20,000	6	$ 120,000	As required for flood, ISF Legal Protection, Acquisitions - assumed at a maximum of 6 per year. 30 gages were previously identified for ISF purposes. Most recent – Purgatoire River to aid in compact compliance.
Installation of new CDMA Cell Phone Gages	5,000	10	$ 50,000	Cost effective alternative to gages where reliable cell service is available
Operation and Maintenance of Cell Phone Gages	8,000	10	$ 80,000	
Hydrographic Equipment Purchases	50,000	1	$ 50,000	Flumes, staff gages, pressure transducers, flow meters, etc. Includes new equipment and upgrades to older satellite equipment.
Cableway Installations	25,000	8	$ 200,000	Roaring Fork River at Basalt, and as determined by coordination with DWR.
Total			$581,000	

As identified above, in previous years DWR requested approximately $300,000 for the refurbishment of existing gages and replacement of equipment associated with the operation of the Satellite Linked

Monitoring system.[1] This year's nonreimbursable request was reduced by $50,000 in recognition of the current budget crisis. This reduction will delay the replacement of approximately 15 outdated DWR satellite data collection platforms (DCPs) that must be replaced to current National Oceanic and Atmospheric Administration (NOAA) high data rate transmission standards by the year 2013. However, DWR currently anticipates that even with this reduction, it will be able to have all current DCPs replaced to NOAA standard by 2011. Since the existing DCPs are still operational, there will be no interruption in the collection of data as a result of this funding reduction and resulting delay. Nevertheless, a reinstatement of the $50,000 will be necessary in subsequent years as NOAA is currently in the planning stages for the implementation of narrow band transmission protocols, which is the next technology upgrade beyond 2013.

In addition to the reduction in the request for DCP replacement funds, CWCB and DWR will delay the joint flood hardening program, which will save an additional $50,000. This program has already resulted in flood hardening upgrades to the most critical gages identified by DWR, USGS and CWCB. The reduction in funding will only delay updates at a few remaining gages that are less critical.

The following chart represents the reduced funding request of the DWR for FY2010-11, and also shows CWCB's continuous gaging appropriation to meet its mission critical programs



This memo explained the State's stream gaging programs, funding sources and strategies, as well as the ongoing collaboration between CWCB, DWR, and USGS aimed at strengthening stream gaging efforts throughout the state. A one-year reduction in nonreimbursable request by DWR and CWCB will not result in any interruption in data collection or long-term impacts to the State's ability to provide a state of the art satellite telemetry gaging program for use by multiple stakeholders. Furthermore, DWR and CWCB will continue to collaborate along with the USGS to identify the most critical streamgaging needs throughout the state and will combine resources as necessary to address those needs.

[1] It should be noted that nonreimbursable Construction Fund disbursements for DWR's refurbishment and replacement program represent only a fraction of the costs associated with the operation of DWR's 500 satellite gages. In addition to this funding, DWR utilizes other funding sources and charges operation and maintenance fees to stakeholders to operate and maintain the gages.