

## QUESTIONS FOR GEORGE AND CREW AS OF 5PM December 5, 2012

*Q: In your opinion and experience of managing the Poudre for the benefit of decreed uses, what can be accomplished, by changes in water operations, to make the Poudre downstream of the canyon mouth an ecological healthy river (as defined by last month's presenters)? Possible scenarios to speak to are...*

- 1. Scenario A: Without making changes in the streambed or existing diversion structures*
- 2. Scenario B: Removing inactive diversion structures*
- 3. Scenario C: By providing bypass channels at working diversions structures – specifically those that don't divert in the winter, but are large enough that small winter flows cannot pass*

*Q: The Poudre has been described as a "working river", in your opinion are there things that could be done to make it work better? Please address if you feel the Poudre could "work" better with the following:*

- 1. Repaired structures*
- 2. Greater water user cooperation*
- 3. Additional infrastructure*
- 4. Public education*
- 5. Increased staff at the Division and State Engineers Offices*
- 6. Advanced technologies that measure and distribute water*
- 7. A change in how water users view the river*
- 8. "Tweaks" to administration and water law*

*Q: As the public's expectation for accountability and transparency of river administration increases, what can be done by the Division of Water Resources and water users, to more regularly convey to the public in an understandable form the standard river administration activities?*

*"The Poudre has a history of creating partnerships among water users that allows for diverting, storing, and/or repositioning water supplies in ways that often maximize its yield throughout the basin. In recent years, several courts throughout the State have scrutinized river management via 'gentleman agreements' and deemed them misaligned with the intent of the underlying decrees. From your perspective, do you feel like such decisions may have implications on future administration and/or operations of the Poudre River?"*

What do water commissioners do to "optimize" the river, beyond simply administering the prior appropriation doctrine at every point on the river? And... how has this ability changed over time with significant court cases and other regulatory changes? Is optimization for multiple uses or mainly water supply?

Question for how the river is managed:

I would like to know more about how the water flows are determined and then implemented. Specifically, how can I know, as a business that depends on streamflow, in advance what the streamflows are going to be? I have often called George to get the next weeks streamflows or cuts in flow, but it seems there is probably a better way to get that information.

I'll pose two questions:

The irrigation companies charge their shareholders only for the cost of delivering water and maintaining the delivery mechanisms. Does this mean the water itself has no assigned value? Are water rights values determined only on storage/delivery costs and market demand?

What work is currently being done along the Poudre to help ranching/farming water users maintain consistent flow access and to maximize efficient use of the water they receive?

My questions to the working river panel are pretty basic. Where are the diversions, when are the major calls made, is there any flexibility available, what are the major concerns the agricultural community has about the Poudre, are there opportunities to partner to better meet their needs and improve river health, do we have specific areas in the watershed where we could do a pilot project, one that fulfills delivery needs but also benefits the Poudre.

My primary questions are around the potential use of technology.

Farmers have been incorporating new technology into their operations for many years (GPS etc). What can be done at the ditch company level?

Are there examples of electronically controlled diversion structures in use today in the US?

If so, what would be the pros and cons of being able to operate the structures from a remote location, similar to what is done with electricity?

Would this help us control daily flows to address some of the concerns about frequent fluctuation of water levels impacting the river habitat?

What are the major obstacles, in addition to the cost of conversion?

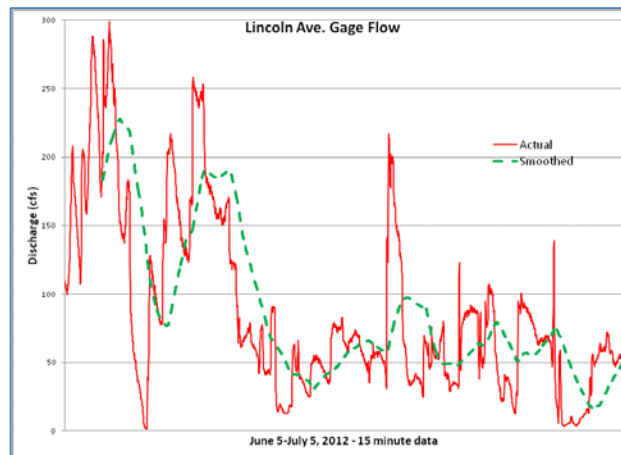
1. Is it possible with existing conditions and supplies to have healthy/minimum stream flows from the mouth of the canyon and downstream of Halligan Reservoir all the way to the confluence with the South Platte? What would it take to make that happen?
2. What would it take to tweak existing water law to make it easier to accommodate rapidly changing needs and circumstances? Is this a good idea?

## Vision S

On reflection, I find that I have several visions for the Poudre. Today, I'd like to outline what I call **Vision S** that has as its goal a **Smother** river during the irrigation season.

Problem – The Poudre through Fort Collins often has highly erratic flows. Erratic flows can interfere with cottonwood seedling establishment, greatly limit fish and other aquatic habitat, and disrupt fish spawning, especially when the channel dries up even for short periods. Large, rapid flow increases are public safety hazards while large rapid decreases may contribute to bank slumping and excess sediment build-up.

Flows below the canyon appear to be more “flashy” than in the mountains, presumably because of abrupt on-and-off releases into the river from Horsetooth or other reservoirs and/or diversions from the river. An example of erratic flows in downtown Fort Collins is illustrated here with flows going from 300 cfs to almost zero over the course of a day or two. The solid line is the actual river flow; the dashed line is a moving average that retains the overall volume going by the Lincoln Avenue gage.



Solution? - Could a careful orchestration of releases and diversions smooth river flows *without adversely affecting anyone's water rights*? If diversions and releases were sequenced and coordinated, allowing for travel time from one diversion location to another, could river flows come *closer* to the smoothed (dashed) line in the above figure?

Learning Needed – We should consult with the River Commissioner, irrigation companies, Fort Collins and Greeley, and Northern Water to confirm the actual reasons for erratic flows under different circumstances, and seek their counsel on what operational changes might be implemented without materially affecting anyone's water rights. Perhaps there are unexpected reasons.

### Questions to be Answered:

- Could simply changing the sequence of release and diversion openings and closings dampen erratic flows?
- Could a pragmatic model be developed that would help test alternative operational strategies and 'learn' how to manage flows better?
- Would smoothing the river in one location (like Lincoln Avenue) just lead to more erratic flows elsewhere?
- Could infrastructure, like automated head gates and instrumentation, help and offer better operational control of diversions, better measurement of flows in the river and through canals, and improved service levels to farmers? If so, could installation be effectively prioritized and funded?
- If infrastructure changes were made, would they also offer recreational and fish passage benefits?
- Would Fort Collins be interested in modifying river diversions to more easily bypass flows rather than sweeping (completely dewatering) the river? What about Thornton?
- Might any capital upgrades be candidates for state-sponsored non-consumptive use funding?
- Would some stakeholders believe that they will lose out if the river were smoothed as suggested?
- Is there enough institutional flexibility to suggest preliminary operational changes, even if small?
- What metric might be a good way to measure progress toward a smoother river?