**Northern Integrated Supply Project (NISP) Discussion**

City of Fort Collins, 222 Laporte Ave., Colorado River Community Room

May 22, 2017

Meeting #2 Notes

## Attendees

*Northern Water:* Don Carlson, Jerry Gibbens, Esther Vincent, Brad Wind, Carl Brouwer

*Fort Collins Utilities:* Carol Webb, Adam Jokerst, Jill Oropeza, Katherine Martinez, Bill Hansen (consultant, formerly of the National Park Service/Water Rights Branch)

*City of Fort Collins Natural Areas:* John Stokes, Jennifer Shanahan

## AGENDA

1) A process/method for moving our conversations forward
2) Our respective motivations for participating in these discussions
   a. What are Northern Water's needs/desires?
   b. What are Fort Collins' needs/desires?
3) Starting a more detailed conversation about flows

## NOTES

1) A process/method for moving our conversations forward
   a. Agreement to focus on one topic to discuss, then move to the next
   b. Topic to discuss first: Flows, Northern Water's Wildlife Mitigation Plan

2) Our respective motivations for participating in these discussions
   a. What are Fort Collins' needs/desires?
      i. Water quality
      ii. Public health and safety/maintenance issue (channel maintenance)
      iii. Environmental flows
      iv. River resilience
   b. Fort Collins' opinion may align partly with CPW's ideas but not all
   c. What are Northern Water's needs/desires?
      i. Regulatory requirements. (Northern is proposing enhancement measures that go beyond what State is requiring. Desire to work with Fort Collins on these.)
      ii. Specificity on what Northern Water will need to manage
         1. Monitoring plan
         2. Adaptive management
      iii. Commitment to work together on adaptive management

3) Starting a more detailed conversation about flows
   a. Fort Collins staff distributed the handout "Defining types of functional flows" containing definitions and a graph. (See attachment.)
      i. Northern Water's definition of peak/flushing flow based on a U.S. Army Corps of Engineer's consultant's report that is not able to be shared at this time

b. Fort Collins idea: to bypass/not divert water for at least three days every year; simple to manage.
c. Northern Water has components of this concept in a Poudre River Peak Flow Program that it will be in its proposed Fish and Wildlife Mitigation and Enhancement Plan. The Peak Flow Program proposal is based on a tiered approach that is linked to Glade Reservoir water levels, hydrologic conditions, and other variables.
d. Northern Water has been investigating the ability to implement this concept under Colorado Water Law and does not have a clear response yet.
e. Northern Water indicated the need to partner with other water users in the basin to implement this concept.
f. On June 8-9, Northern Water will make a formal proposal of its Fish and Wildlife Mitigation and Enhancement Plan to the Parks and Wildlife Commission in Pagosa Springs. The plan will be publicly released at the same time, and be available on Northern Water's website at www.northernwater.org.
g. The group discussed Northern Water's concerns related to downstream flooding issues if peak/flushing flows were implemented.
h. Fort Collins: Would like conversation with City of Greeley on its efforts to connect floodplain with river, etc. City of Greeley and others working with Coalition for the Poudre River Watershed.
i. Fort Collins: can share basic findings and information from Coalition for the Poudre River Watershed at a future meeting
j. The group discussed peak/flushing flows and their effect on yield as well as ramping rates, and their effect on recreation safety and habitat, etc.
k. "Parking lot" issues:
    i. Monitoring and adaptive management
    ii. Physical manipulations
    iii. Water quality and bypass structures
    iv. Natural ramping rates, historical information
    v. Augmentation flow concept
        i. To discuss further later
l. Northern Water asked if Fort Collins is considering flushing flows for Halligan. Fort Collins indicated yes.

**Next Steps**

1) Northern Water's task to complete before next meeting: review and consider longer peak/flushing flows and bypassing water in wet years following a dry period.
2) Fort Collins' task to complete before next meeting: review tiered peak/flushing flow approach, flood issues. Consider whether a tiered approach supports Fort Collins goals and whether revisions are possible to address needs.

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**Next Meetings**

- **Tuesday, June 13.** Meeting at Northern Water on conveyance realignment.
  **ACTION:** Northern Water staff to draft and distribute agenda.
  - **Agenda:** potentially difficult regulatory issues, reclamation facility, facilities owned by Fort Collins, examine potential to move slightly downstream.

- **Monday, June 19** at 9:00 a.m. at City of Fort Collins. Focus on Northern Water's presentation to CPW, to identify discussion topics. Focus on flows and mitigation plan.
  **ACTION:** City staff to draft and distribute agenda. (NISP Discussion Meeting #3)

- **Monday, July 31** at 9:00 a.m. at Northern Water. Focus on flows and mitigation plan.
  **ACTION:** Northern Water staff to draft and distribute agenda. (NISP Discussion Meeting #4)

Defining types of functional flows

**Channel maintenance flows** function to maintain river's channel capacity.

On an "unconfined Poudre" river these flows would cause scour and deposition and associated channel movement (migration and avulsion) in turn maintaining the river conveyance capacity. On the "confined Poudre" even with limitations on lateral channel movement, channel maintenance flows support flood conveyance capacity by achieving the functions of flushing flows and scouring encroaching vegetation within the bankfull channel and eroding banks or downcutting where possible.

**Flushing flows** cleanse sediment and rejuvenate the stream bed.

Flushing flows mobilize fine sediment particles from the river bed substrate matrix by the physical force of moving water. On a predominantly cobble bed river, such as the Poudre through Fort Collins, finer sediments must be "flushed" from behind and underneath the cobbles. To flush these fines and clear the interstitial spaces mobility thresholds for the D50 are calculated. As well, when the D50 is mobilized the river bed remains unarmored ("crunchy"), maintaining steady the level required to mobilize the D50 (in contrast to the rise in mobility thresholds that occurs with armoring).

**Bank-full** flows maintain the channel's form and stability.

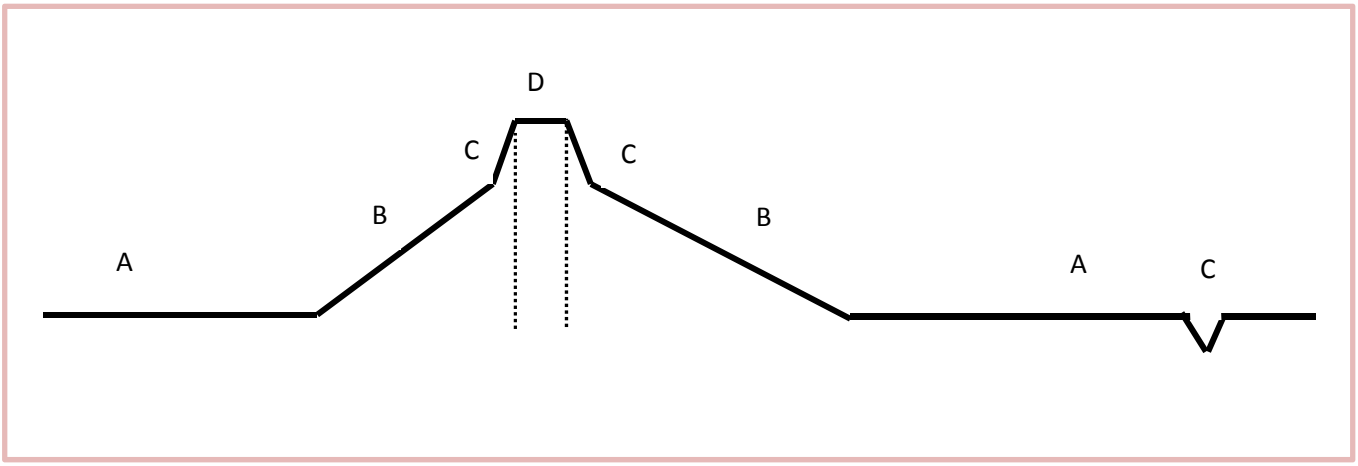
Bankfull flows are the maximum discharge a stable channel can convey without flowing out onto it's floodplain and occur most often on a 1.5 to 2 year return interval. This flow level maintains channel capacity through frequent physical disturbance and inundation that limits vegetation growth within this channel width/depth.

**Fine flushing flows** mobilize gravels, sand, and silt.

This flow is valued as it creates loose gravel habitat needed for spawning fish. As a stand alone flow value it applies to gravel bed rivers. On a cobble dominate riverbed such as the Poudre this flow will infrequently release the fine material caught behind/underneath cobbles (and associated interstitial spaces), thus leaving the "hidden" finer sediments in place.

Flows to maintain **riparian** and **wetland systems**

> **Riparian regeneration** flows scour vegetation in the riparian zone, creating bare sunny habitats
>
> **Riparian inundation** (overbank saturation ) flows saturate the riparian zone through overbank flooding, wetting the entire soil column, sustaining riparian habitats/species
>
> **Flows that maintain shallow water table in alluvium, hydric soils**, groundwater rise that correlates to flows
>
> **Wetland flows-** flows to maintain longer duration saturated soils (14 days)




**A** Base flow

**B** Ascending and descending limbs: flows from spring to mid-summer above base flows, rising and descending to/from the peak flow days

**C** Ramping rates (short duration changes to flow volumes resulting from water management)

**D** “peak” flows (single or multi-day peak flow days)