



Memo

To: Lyons Board of Trustees and St. Vrain Creek Coalition

From: Lyons Watershed Advisory Board

Date: February 6, 2017

Re: North St. Vrain Creek - Apple Valley Rehabilitation Project

The following review comments are provided by the Lyons Watershed Advisory Board (WAB) regarding the 30% design for the Creek Rehabilitation Plan for Apple Valley. This is CDBG-DR Planning Project CDBG-DR-P16-020, DRAFT 1-8-2016 prepared by S2O. Advisory Board members Matthew Rooney, Jeff Crane, and Richard "Hoss" Dean were not of this review.

Town of Lyons proper is immediately downstream of Apple Valley. The 30% design report was for Creek rehabilitation/restoration work to: "reduce impact of future flooding, provide public safety, protect private and public infrastructure, restore creek and surrounding areas, and provide multi-objective solutions".

WAB concerns are as follows:

- 1) There is no assessment of the net effects of the proposed work on attenuation of future flooding downstream. Without such positive effects on flood hazard, we believe the work would not address the most important goals. The 30% Plan does identify some specific opportunities, including now-abandoned channels that could provide additional temporary storage for floodwater. Town of Lyons should ask that this useful function be incorporated into the final creek rehabilitation Plan wherever possible.
- 2) The Town has made significant investments in rehabilitating the river within town limits and needs assurances that upstream actions will not result in a net increase in sediment transport downstream.
- 3) Plan should use buy-out properties for flood attenuation, including secondary channels and sediment storage, to the maximum extent practicable. This would align use of these properties to their intended purpose in the buy-out programs.
- 4) Plan should identify other private properties that could provide effective flood attenuation to reduce flows coming into the town. The WAB respects private property rights, but would like to understand cost/benefits of how the use of lands in private ownership in Apple Valley affect incoming flooding, and to examine if there are opportunities for the Town to partner with landowners.

- 5) The WAB recognizes the issues concerning the Longmont and Lyons water lines, and supports the integration of the Creek project design with potential relocations of the lines. The WAB encourages the Lyons Town Board of Trustees to pursue relocation options.
- 6) The detailed revegetation plan is a useful accomplishment, especially at this 30% level. Water quality is important to the Town; we encourage the Plan to promote wide floodplain buffers to control surface runoff from lawns, pastures, and other anthropogenic features.
- 7) Recent work in the American river restoration community concludes that “restoration of the ecosystem is best accomplished by the geomorphic processes that create and renew habitats”. Thus, where these processes have been impaired, restoration of those processes is desired. This is a change from previous restoration approaches that emphasized building of structural elements (or rebuilding entire channels) to create desired forms. The Draft 30% design includes channel reconfiguration plans that are expensive to accomplish and have the effect of rebuilding a supposedly “natural” channel. Instead, plans are needed to accommodate the demonstrated tendency of the flooding North St Vrain channel to avulse (to new pathways) and to migrate and laterally erode. We encourage finalization of the 30% design to put more emphasis on this need.
- 8) Also, “in urban areas and where infrastructure is threatened, active intervention and hardened bed and banks may be unavoidable given constraints of urban encroachments and altered hydrology. But wherever possible, river restoration should embrace channel dynamics and allow the river room to move and develop channel complexity through natural fluvial processes”¹. Again, the Town should encourage S2O to finalize the 30% design with more emphasis on planning for ongoing riverine changes during even moderate flooding, and less on the expensive construction of new channel configurations and preserving in place existing river banks. We note that vertical channel banks have an important role in riverine ecology, and out-sloping of these is difficult to defend on an ecological/habitat basis.
- 9) Overall, where the channel avulsed and straightened, during the 2013 flood, WAB is not convinced of a clear need for the work and expenditures needed to abruptly re-establish the old channel. The final 30% report should more fully consider the advantages of not re-routing the river along these reaches, and instead maintaining the former channel as an open spill way for accommodating flood flows, thereby reducing flood hazard locally (to adjacent landowners), and downstream (to Town of Lyons). Or it may be possible to encourage progressive transition of normal river flow back along the former meander pathways, while retaining the newly-carved straight reaches as flood spillways and wetlands habitat. Whatever the final design outcomes, it is noted that preserving both old and new channel locations provides maximum opportunity for additional water storage and flood wave attenuation during flood events.

¹. “Stream Restoration in Dynamic Fluvial Systems: Scientific Approaches, Analyses, and Tools”. Geophysical Monograph Series 194, Copyright 2011 by the American Geophysical Union 10.1029/2010GM001020.