

# STREAM RESTORATION

Longmont Dam Road

## Colorado Flood Recovery: Watersheds and Natural Resources

### Multi-Objective

- **Demonstration Project**
- **Habitat Enhancement**
- **Fisheries Enhancement**
- **Flood Hazard Reduction**
- **Community Engagement**



**Watershed**  
**North Saint Vrain**



**Locale**  
**Below Longmont Dam, Lyons**



**Primary Sponsors**  
**Boulder County  
City of Longmont**



**Project Cost**  
**\$184,057**



**Date Complete**  
**Fall 2016**

North Saint Vrain Creek and the adjacent Longmont Dam Road were heavily damaged during the September 2013 flood event. Boulder County completed temporary repairs of the road soon after the flood waters receded with plans to come back and make permanent repairs. In 2016, in partnership with the City of Longmont, and with funding from the U.S. Department of Housing and Urban Development, the Boulder County Creek Recovery and Restoration Program restored a 1,960 foot section of North Saint Vrain Creek below the Longmont Dam in conjunction with the permanent repairs to Longmont Dam Road.

The North St. Vrain Creek Collaborative Restoration Project focused on stabilizing the creek and improving the aquatic and riparian environment by creating a low-flow channel, wetland benches, and implementing extensive revegetation. Longmont Dam Road accesses the Buttonrock Preserve further upstream, a popular recreational destination for hiking and fishing. Creek repairs in this section are adjacent to a parking lot with multiple small access trails to the creek. Creation of enhanced trout habitat for the numerous fishermen and women who use this reach, as well as laying the groundwork for a future Americans with Disabilities Act (ADA) accessible fishing pier, was an important component of this project. Project design also endeavored to create safe in-stream conditions for general recreation and boating.

*Creek restoration was implemented in conjunction with reconstruction of Longmont Dam Road by the Boulder County Transportation Department, allowing cost efficiencies estimated at 50 percent compared to completing these two projects separately.*

*"On behalf of Trout Unlimited and the Saint Vrain Creek Coalition, I have attended three opportunities for input to this project. I believe this project exhibits some significant examples of creative problem solving to leverage limited resources and post-flood habitat mitigation... The St. Vrain Anglers Chapter Trout Unlimited is in support of the designed habitat improvements. The structural changes to pools and riffles are consistent with significant pre-flood elements and current geomorphology. The re-vegetation plans are consistent with pre-flood conditions and will be an important element of re-establishing the natural and wild look of the preserve."*

—Barbara Luneau, St. Vrain Anglers Chapter 316, Trout Unlimited





## North Saint Vrain Creek



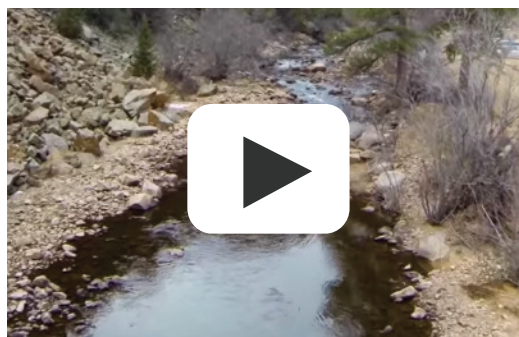
# River Channel Restoration

The overall restoration goal was to restore the stream channel and improve the North Saint Vrain Creek in-stream aquatic habitat and riparian ecology. This project included excavation and configuration of creek benthic material to create, enhance and protect aquatic riffle, pool and run habitat; placement of large rock structure to provide benthic habitat stability and maintain creek resilience; placement of habitat rock and features for structure and flow; and revegetation of riparian areas. The channel was narrowed to keep it deeper in one spot and put structure in to take pressure off of the banks in future high water events.

## Stakeholder Engagement

In addition to the technical pieces of the project, stakeholder engagement was critical to Boulder County. Prior to beginning the design process, public and private stakeholders participated in a site visit with the design team to provide upfront input on what they would like to see in the design. Draft designs were then posted on the Boulder County website for review and comment. In addition, the design team presented the draft designs to the Saint Vrain Creek Coalition's Project Advisory Committee and conducted an in-depth design review meeting. Where possible, comments on the draft design were incorporated into the final design plans.

Project designer Bill Schenderlein with Blue Earth Solutions, explains how he used principles of natural channel design to restore and enhance the fisheries, recreational use, and ecological health of this popular section of North Saint Vrain Creek (March 2016).  
Video: approx 2 min.



[Watch the Video](#)

## Project Objectives

1. Protect existing healthy in-stream and riparian habitat;
2. Increase in-stream longitudinal connectivity by establishing a sustainable low-flow channel;
3. Establish resilient multi-stage creek channel with healthy width-to-depth ratios;
4. Restore or enhance aquatic deep water habitat for trout over-wintering;
5. Restore and enhance riparian vegetation cover;
6. Restore enhanced trout habitat area for a future ADA accessible fishing pier;
7. Perform habitat restoration and improvements while protecting existing infrastructure; and
8. Do not create unsafe conditions for the general public and on-water recreation activities.





Debris restricting flow post flood (2013)

# Before

During the 2013 flood event, flood waters scoured tons of rock, woody debris and silt from this section of North St. Vrain Creek, disrupting aquatic habitat and removing adjacent riparian vegetation. Longmont Dam Road was washed out and channel migration and sediment aggradation and degradation occurred, destabilizing the river banks throughout much of the project area. After the flood, the roadway was rebuilt and riprap was placed between the road and creek for emergency stabilization, but this was not a permanent fix as riparian vegetation was not restored. By July 15, 2015, the North St. Vrain Creek received only “fair” to “good” overall ecosystem scores (ecological assessment by Walsh Environmental), as most of the system had a narrow riparian corridor with large gaps in vegetation and limited canopy cover with some habitat complexity. There were also several substantial in-stream structures that broke up the stream flow and created barriers for fish passage.



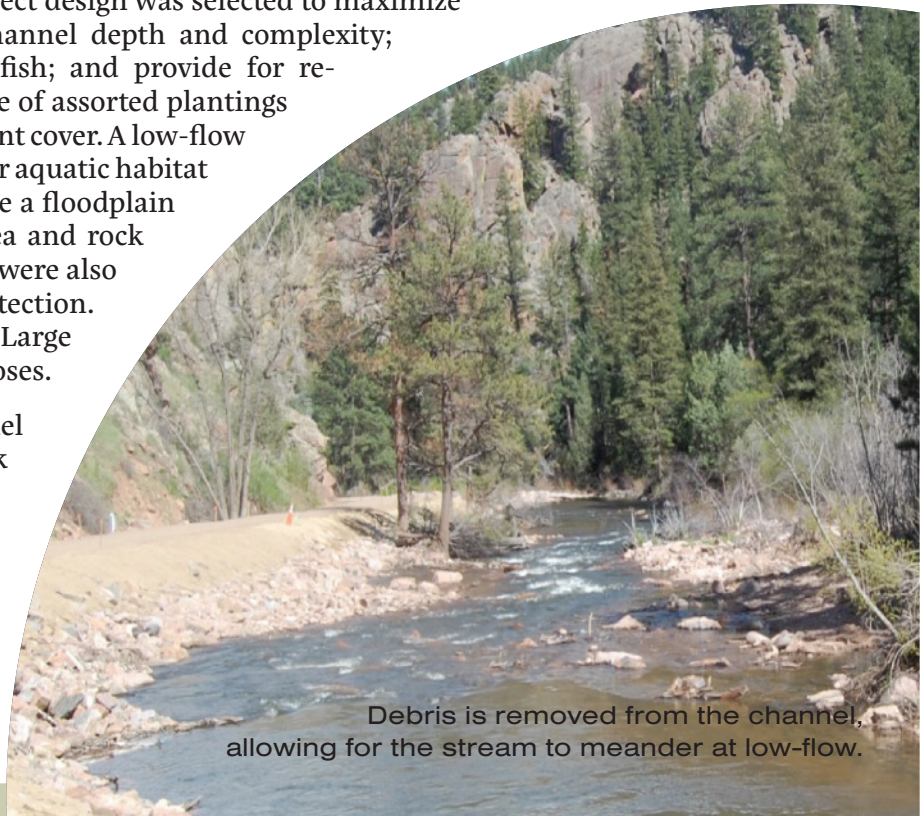
2013 flood waters significantly damaged this section of North Saint Vrain Creek. These photos show a culvert on Longmont Dam Road just upstream of the current restoration project post flood and after initial repair to the road.  
(Photos: City of Longmont)



# After

Design criteria were developed to accomplish permanent restoration based on the post-flood state of the creek. Above the Longmont Dam, there was an area of stream reach that was undisturbed by the flood that was used as a reference. Two design flows were evaluated. Project design was selected to maximize habitat connectivity with good low-flow channel depth and complexity; create deep water over-winter habitat for fish; and provide for re-establishment of riparian vegetation with use of assorted plantings to enhance the riparian vegetation to 70 percent cover. A low-flow channel was created to allow adequate flow for aquatic habitat year-round, along with a gravel bar to provide a floodplain bench that allows for a healthy riparian area and rock vanes to structure flow diversity. Large rocks were also added in select areas for increased bank protection. Contractors also created pools for fish habitat. Large rocks found on-site were used for these purposes.

Absent significant high flow events, the channel will likely remain stable once streambank vegetation has been re-established. The Button Rock and Longmont Reservoirs located above this section of creek also serve to manage flows. Creek restoration was necessary to achieve biological connectivity and restore natural beneficial function of the creek, but the channel was mostly left in its current (post-flood) alignment.



Debris is removed from the channel, allowing for the stream to meander at low-flow.



# - PROJECT - SPONSORS

Creek restoration was implemented in conjunction with permanent reconstruction of Longmont Dam Road by the Boulder County Transportation Department, allowing cost efficiencies estimated at 50 percent compared to completing these two projects separately.

This demonstration project was primarily funded by the Colorado Department of Local Affairs' Watershed Resilience program using Community Development Block Grant – Disaster Recovery funds, and is intended to serve as a model for other post-flood stream restoration projects along the Front Range.

Flatirons, Inc. and Blue Earth Solutions developed the designs for the road and creek projects. American West Construction, LLC constructed both the road and the creek elements of the project. Loris and Associates and Blue Earth Solutions provided construction oversight for the project.

## FOR MORE INFORMATION

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[sproctor@bouldercounty.org](mailto:sproctor@bouldercounty.org)  
[www.BoulderCountyCreekPlan.org](http://www.BoulderCountyCreekPlan.org)

## Partners & Funders

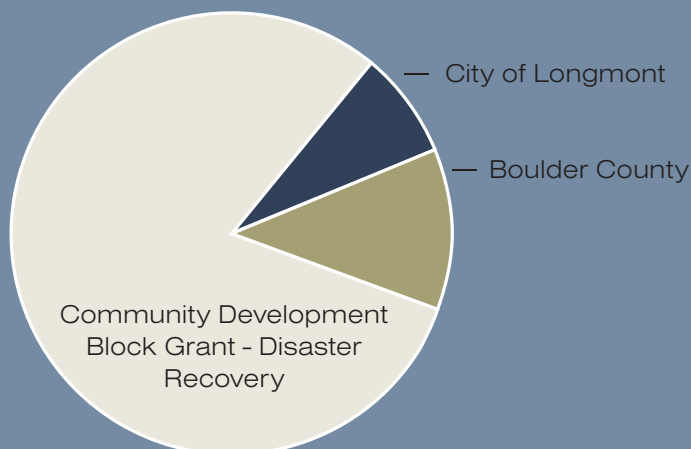
Boulder County  
City of Longmont  
Colorado Department of Local Affairs  
U.S. Department of Housing  
and Urban Development  
Town of Lyons  
Colorado Parks and Wildlife  
Saint Vrain Creek Coalition  
Trout Unlimited

## Consultants

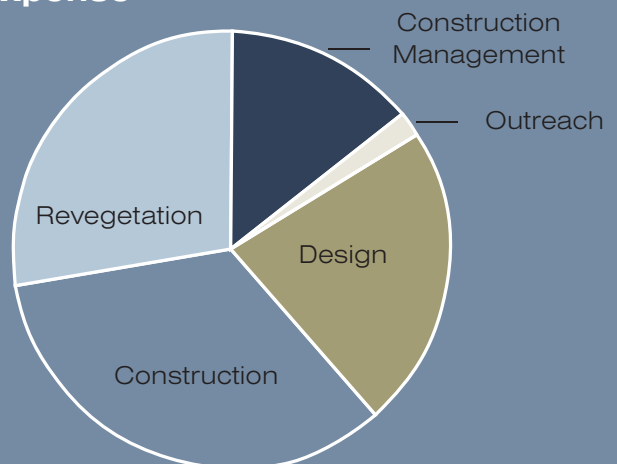
American West, Construction  
Loris and Associates,  
Construction Oversight  
Flatirons, Inc., Design  
Blue Earth Solutions, Design/Oversight

## BUDGET

### Income



### Expense



**Total: \$184,057**