



January 9, 2020

To: Chris Sturm, Colorado Water Conservation Board (CWCB)

From: Left Hand Watershed Center

RE: CWCB Watershed Restoration Grant – St. Vrain Maintenance and Monitoring (POGG1, PDAA, 202000002153) Final Report

The purpose of this memo is to provide a final report regarding activities related to Left Hand Watershed Center's St. Vrain Maintenance and Monitoring project (POGG1, PDAA, 202000002153). This includes the status of the tasks identified in the statement of work and a description of any major issues that have occurred and any corrective action taken to address these issues. The project timeline was 08/20/2019 – 12/09/2019. The total CWCB Watershed Restoration Grant budget is \$35,071.84.

The goal of this project was to complete adaptive management including weed control, seeding, and monitoring activities at St. Vrain Creek project sites in the summer/fall of 2019. The project objectives were to:

- Complete necessary vegetation maintenance activities including watering/irrigation, weed control including hand removal, chemical control, and weed whacking/mowing methods, and revegetation including seeding and/or planting.
- Complete site monitoring activities using the Left Hand Watershed Center's updated [adaptive management plan](#) which includes EWP Inspections, photo monitoring, vegetation surveys, benthic macroinvertebrate (BMI) surveys, and habitat surveys.
- Complete data analysis.
- Complete necessary grant project management and reporting.

1. Progress Towards Project Completion

Task 1: Adaptive Management

Stewardship Activities

From April to December 2019, the Watershed Center staff, volunteers, and consultants completed various stewardship activities at four project sites (McConnell, Apple Valley North, Apple Valley South, and SV3) in the St. Vrain Creek watershed. These tasks were completed using funds from this grant and through separate funding provided by the St. Vrain Creek Coalition. Activities included replanting, weed control, reseeding, and evaluating irrigation systems. We hosted three volunteer events with local groups and community members including: BOCO Gear, CEMEX, CU Boulder, and Niwot High School Environmental Club. Other vegetation and irrigation tasks were completed by contractors: Aloterra, TEENS Inc., Frontier, Wildland Restoration Volunteers (WRV), and Natural Resources Services Inc. (NRSI). The following table summarizes the stewardship tasks, dates, groups involved, sites of activity, and activity descriptions:

Date	Group(s)	Project Name(s)	Description
Replanting			
April 2019	Frontier (Contractor)	McConnell	Under warranty. Replanted D40 container stock on left bank of McConnell.*
April 2019 (two events)	Aloterra (Contractor), BOCO Gear, CEMEX, CU Boulder, Niwot High School, and community members (Volunteers), Watershed Center	Apple Valley South	Under warranty. Harvested and replanted 600 willows along right bank.*
Chemical Weed Control			
April 2019	NRSI (Contractor)	McConnell	Chemically treated noxious weeds across 0.84 acres.**
Mechanical Weed Control			
June 2019	WRV (Contractor)	Apple Valley North	Under warranty. Disked downstream end of 100% kochia-infested topsoil overflow channel.*
June 2019	Aloterra (Contractor)	Apple Valley North, Apple Valley South	Hand pull noxious weeds across four acres.**
July 2019	TEENS Inc. (Contractor)	Apple Valley North, Apple Valley South	Hand pull noxious weeds across four acres.**
Oct. 2019	NRSI (Contractor)	Apple Valley North	Mowed three mowed acres of entire 100% kochia-infested topsoil areas on overflow and main channel.
Reseeding			
April 2019	Frontier (Contractor)	McConnell	Under warranty. Reseeded zones 3 and 4.*
June 2019	WRV (Contractor)	Apple Valley North	Under warranty. Reseeded zones 2 and 3, and reseeded disked downstream end of 100% kochia-infested topsoil overflow channel.*
Oct. 2019	NRSI (Contractor)	Apple Valley North	Reseeded three mowed acres of entire 100% kochia-infested topsoil areas on overflow and main channel.
Oct. 2019	CEMEX (Volunteer), Watershed Center	Apple Valley North	Reseeded 1.5 acres of upstream project area banks.
Oct. 2019	Watershed Center	SV3	Reseeded 0.25 acres of project area.
Irrigation Maintenance			
Aug. 2019	Frontier (Contractor), Watershed Center	McConnell	Inspected irrigation. Based on survivorship and condition of irrigated plants, Frontier and the Watershed Center deemed it unnecessary to maintain the irrigation system.

*Contractor funded, part of the contractor's one-year warranty for the project.

**Funded via Watershed Center's match funding for this project.

Stewardship Partner Meetings

In addition to actively maintaining vegetation, the Watershed Center Staff spent time coordinating meetings with various stakeholders within the St. Vrain to ensure all stakeholders agreed upon the approach taken. This included consultation and meetings with Flywater, CWCB, City of Longmont, St. Vrain Left Hand Water Conservancy District, Boulder County, Town of Lyons, private landowners and more.

Monitoring Activities

From August to December 2019, Watershed Center staff, volunteers, and contractors completed six monitoring surveys at six sites throughout the St. Vrain Creek Watershed. In addition, staff met with engineers from Flywater and Enginuity and CWCB to discuss the failed structures at Apple Valley North. Survey site names, creek name, and ownerships are as follows:

Site Name	Creek Name	Ownership
Button Rock Preserve	North St. Vrain	City of Longmont
Apple Valley North	North St. Vrain	Private, St. Vrain Creek Coalition project
Apple Valley South	North St. Vrain	Private, St. Vrain Creek Coalition project
Hall Meadows	South St. Vrain	Boulder County
McConnell	St. Vrain	Private, St. Vrain Creek Coalition project
Bullock	St. Vrain	Boulder County

Monitoring surveys included EWP Inspections, photo monitoring, habitat surveys (including two pebble counts), vegetation surveys, and BMI surveys. Field work was completed by Watershed Center staff, volunteers from CU Boulder, and BioHabitats. The table below summarizes surveys completed throughout the St. Vrain watershed and current status of data collected.

Survey	Timing	Protocol	Survey Form	Sites Surveyed in 2019	Total Sites	Progress to Date
EWP inspections*	June-Sep	N/A	EWP Inspections	3	3	100%
Photo monitoring	Aug-Sep	CWCB SOP	Watershed Center Form	6	6	100%
Habitat Survey	Aug-Sep	US Forest Service	US Forest Service (revised)	6	6	100%
Pebble Counts	Aug-Sep	US Forest Service	US Forest Service (revised)	6	6	100%
Vegetation Surveys	Aug-Sep	Watershed Center/ Biohabitats	Riparian Monitoring Form	6	6	100%
BMI	Sep- Oct	CDPHE methods	N/A	6	6	100%

*Survey performed under separate funding.

Reporting

Reports for this project include EWP Inspections and our 2020 State of the Watershed (in progress). 2019 EWP inspection forms for Apple Valley North, Apple Valley South, and McConnell have been

submitted. Currently, Watershed Center staff are working with contractors (BioHabitats and Timberline Aquatics) on data analysis and reporting. Our final 2020 State of the Watershed report is expected in March 2020.

2. Obstacles Encountered and Solutions

Below is a summary of obstacles encountered and solutions during this phase of the project.

- Intensive stewardship needs at Apple Valley North – The topsoil areas of Apple Valley North were 100% infested with Kochia, an agricultural cover crop (Attachment 1). Without intensive mechanical removal and reseeding, the infestation would choke out all native grasses. To overcome this obstacle, we allocated funds that were not needed for McConnell irrigation maintenance to hire NRSI to mow and intensively reseed topsoil areas. We expect that these areas will need to be mowed and reseeded for the next few years.
- Gas pipeline exposure during peak flows at Apple Valley North – During peak flows, a buried gas line was exposed in the overflow channel and was reported by landowners in June 2019 (Attachment 2). To address the issue, Watershed Center staff visited and marked the site and notified Xcel Energy. Xcel energy was expected address the pipeline in November 2019.
- Long term funding for adaptive management on St. Vrain sites. This short-term grant provided a necessary stop-gap to allow us to continue necessary adaptive management tasks at St. Vrain project sites. Longer-term funding needs have been identified, including funding to repair structures on the Apple Valley North project site (Attachment 3). As such, the Watershed Center collaborated with the St. Vrain Creek Coalition to raise match funds and apply for the grant funds needed to complete this longer-term work.

3. Recommendations & Follow up

As described above several follow up activities are recommended as a result of monitoring:

- Acquire longer-term funding for adaptive management at St. Vrain project sites. As mentioned above, the St. Vrain Creek Coalition and Left Hand Watershed Center collaborated to pursue longer term adaptive management funding. In order to properly assess trends towards resilience and identify follow up management actions, we recommend implementing adaptive management for at least two additional years.
- Give high priority to repairs and maintenance activities at Apple Valley North. These include annual mowing and reseeding of the Kochia-infested topsoil areas for the next three years and repair of failed instream structures.
- Adjust EWP Inspection report due date to the fall or end of year. EWP Inspections for McConnell, Apple Valley North, and Apple Valley South were due in June, which forced us to perform our inspections during high flow. At this time, structures may be submerged or adjusting. We did not identify the structure failure at Apple Valley North until low flow conditions, where professionals could visually inspect features and safely evaluate them in the creek.

4. Photographs, Summaries of Meetings, and Reports (Attachments)

1. Site Photos of Kochia Infestation
2. Site Photos of Exposed Pipeline
3. Site Photos of Failed Structures, Courtesy of Flywater

Attachment 1
Site Photos of Kochia Infestation



Photos of Kochia infestation at the Apple Valley North overflow (top) and main channel (bottom). By Watershed Center staff on 6/27/2019.

Attachment 2
Site Photos of Exposed Pipeline



Photos of exposed gas pipeline at Apple Valley North overflow. By Watershed Center staff on 6/27/2019.

Attachment 3

Site Photos of Failed Structures, Courtesy of Flywater



Figure 1- Cross channel structure stability, rock movement, looking downstream



Figure 2 - Cross channel structure stability, rock movement, looking upstream

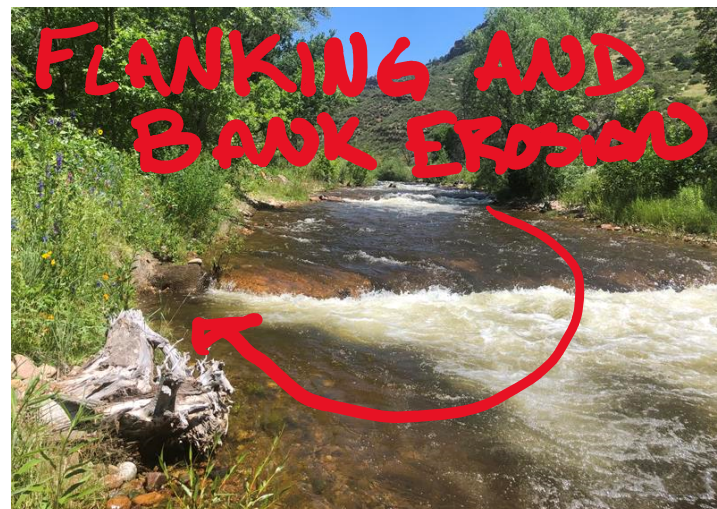


Figure 3 - Cross channel structure stability, flanking, bank erosion, looking upstream