

Prepared for:  
**Boulder County, Colorado**



# Flood Planning & Preliminary Design Services for South St. Vrain Creek Restoration at Hall Ranch

## Project Goals and Scoping

May 24, 2016



Meeting with  
General Public



In association with:  
Otak, THK, ERO, and Blue Mountain



# Introductions

## Introduction

- Purpose of meeting

## History of project

## Planning area

## Project sponsors and funding

- 30% design and construction

## Project website

- Information and comment
- [www.BoulderCountyOpenSpace.org/ssv](http://www.BoulderCountyOpenSpace.org/ssv)

Introductions

Master Plan

CDBG-DR & EWP

Matrix Team

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# South St. Vrain Creek Restoration Planning Area





# St. Vrain Creek Watershed Master Plan

- 🏗️ Tier 1 - Projects reducing flood risk due to post-flood conditions
- 🏗️ The purpose of this alternative is to implement a channel alignment that will optimize the interaction with completed, ongoing, and funded projects while being sensitive to the constraints presented by the presence of numerous private residences throughout this river corridor. The implementation of this alternative will expedite the maturation of this reach by re-establishing a natural channel, repairing erosion scars, re-establishing floodplain benches, building point-bars and excavating pools, re-vegetating denuded areas, and stabilizing channel banks. (p. 7-18)

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# St. Vrain Creek Watershed Master Plan

 The Master Plan also calls out the following restoration strategies for this reach (p. 7-23 to 7-25):

- Incorporate/stabilize a low flow channel section with lower width-to-depth ratio
- Increase in-stream habitat complexity by incorporating pools, boulders, rock clusters, and LWD (large woody debris)
- Revegetate riparian corridor with native species where needed

 However, the Master Plan also states “more detailed technical analysis and site specific survey and topographic information will further refine/revise the conceptual improvements reflected (in the Master Plan)” (p. 7-23 to 7-25).

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# CDBG-DR & EWP Funding

## Community Development Block Grant – Disaster Recovery Planning Grant

- Grant = \$295,000
- Planning, surveys, engineering, public engagement, and up to 30% design for creek restoration

## Emergency Watershed Protection Program Eligible Projects

- 30% design complete by September 1, 2016
- Construction ready by January 1, 2017
- SSV 1 & SSV 2 = \$1.6 million

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# CDBG-DR & EWP Funding

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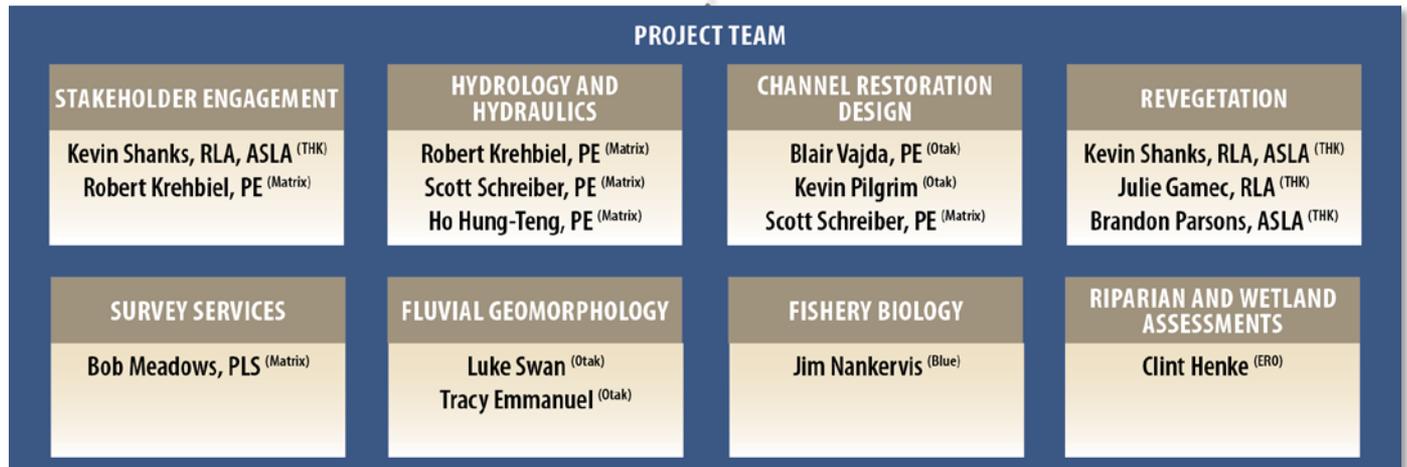
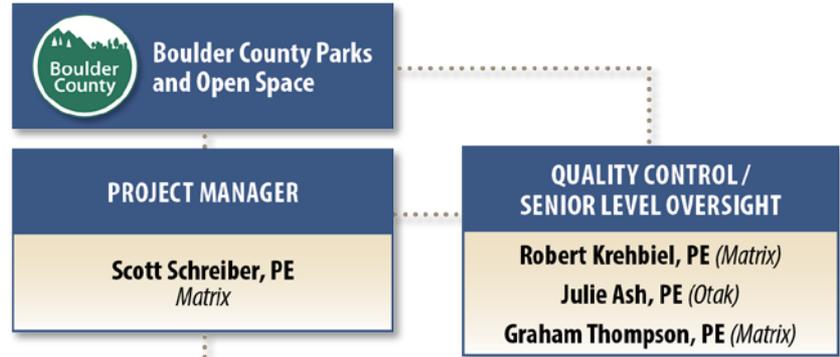
	Spring 2016	Summer 2016	Fall 2016	Winter 2016	Spring 2017	Summer 2017	Fall 2017	Winter 2017
Planning and 30% Design* (CDBG-DR)								
Permitting & Environmental Clearance								
100% Stream Design, as necessary								
Bidding & Contracting								
Implementation (EWP) - 220 days								

\* Including Coalition and public engagement





# Matrix Team



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# Matrix Team

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## Matrix

- Fully integrated consulting firm
- Leaders in H&H analysis along with flood recovery

## Otak

- History of work in South St. Vrain Creek Watershed
- Leaders in **resilient** flood recovery solutions

## THK

- Native revegetation and riparian corridor restoration
- Leaders in public engagement and consensus-building



# Project Schedule

## Design schedule

- Notice to proceed: May 2016
- Alternative analysis: June 2016
- Preferred alternative: July 2016
- 30% design: August 2016
- Final deliverable: September 2016

## Public engagement meetings

- General public and St. Vrain coalition:
  - Meetings in late May, June, and August

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# Pre Flood Aerial: 2012





# Post Flood Aerial: 2013



Google earth

Imagery Date: 10/6/2013 49°12'04.43" N, 105°17'56.62" W elev: 5559 ft eye alt: 6463 ft



# Post Flood Aerial: 2014





# Post Flood Aerial: 2015





# Pre Flood Aerial: 2012



Google earth

Imagery Date: 10/7/2012 40°12'35.59" N -105°16'59.30" W elev: 5424 ft eye alt: 6343 ft



# Post Flood Aerial: 2013



Google earth

Imagery Date: 10/6/2013 40°12'35.59" N 105°16'59.30" W elev. 5424 ft eye alt. 6343 ft



# Post Flood Aerial: 2014





# Post Flood Aerial: 2015



Imagery Date: 10/9/2015 49°12'35.59" N 105°16'59.30" W elev: 5424 ft eye alt: 6343 ft



# Pre Flood Aerial: 2012





# Post Flood Aerial: 2013

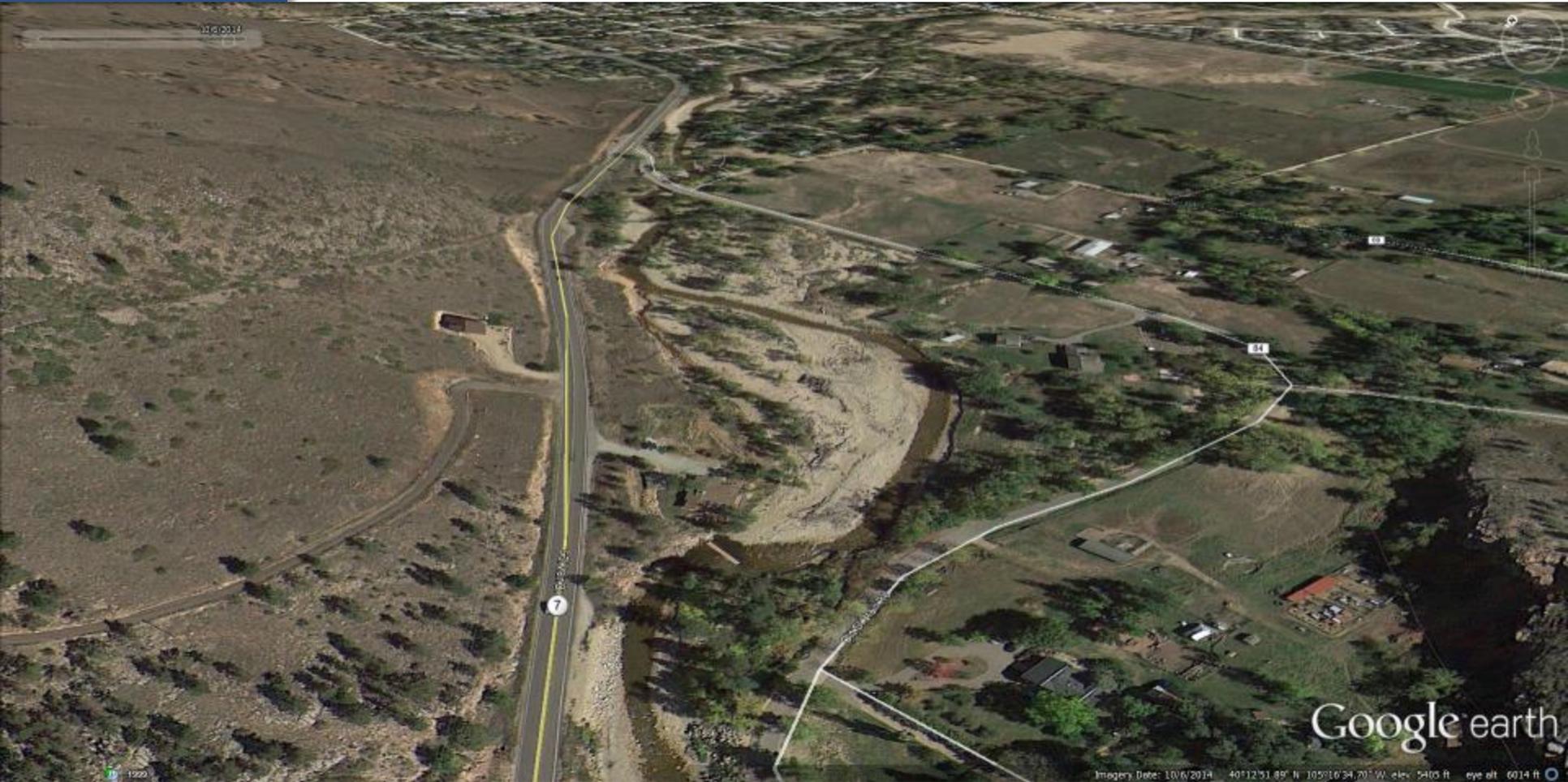


Google earth

Imagery Date: 10/6/2013 40°12'51.89" N 105°16'34.70" W elev: 5403 ft eye alt: 6014 ft



# Post Flood Aerial: 2014





# Post Flood Aerial: 2015





# General Project Goals

-  Reduce impact of future flooding
-  Provide public safety
-  Protect private and public infrastructure
-  Re-establish floodplain connectivity
-  Restore creek and surrounding areas

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# Project Goals – Execution Strategies

## Jumpstart return to healthy corridor:

- Reconnect floodplains
- Expedite maturation of native plant associations
- Restore aquatic and riparian health

## Risk reduction:

- Reduce impact of future flooding
- Protect private and public infrastructure
- Improve public safety

## Decision Process:

- Neighbors and other stakeholders
- Boulder County

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# Execution Strategies - Project Approach

## Jumpstart return to healthy corridor / Risk reduction:

- Review of Background/Existing Information
- Channel Forming Hydrology
- Channel Hydraulics
- Geomorphology
- Sediment Transport
- Aquatic and Terrestrial Habitat
- Permitting Process

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# Execution Strategies - Project Approach

## Decision process:

- Review established project goals
- Community input to I.D. project issues
- Develop evaluation criteria
- Develop alternatives
- Community input on alternatives
- Alternatives analysis with evaluation criteria
- I.D. preferred alternative
- Community input on preferred alternative
- Refine preferred alternative with additional technical analysis
- 30% design
- Public presentation

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# General Project Goals

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# Decision Process

Figure A

## Monument Creek Watershed Restoration Master Plan Decision Making Process

### Context Statement

The Monument Creek Watershed includes 236.8 square miles of forest and upland grass lands. The mountains meet the plains within the watershed which is why the United States Air Force Academy is located at the center of the watershed. The watershed is predominantly north of Colorado Springs and includes the communities of Monument and Palmer Lake. With a diversity of public and private ownerships, the watershed is a major regional tourist and recreation destination as well as home for a large percentage of El Paso County and Colorado Springs residents.

The watershed is characterized by extremes in temperature and precipitation, large elevation changes, steep gradients and diverse ecosystems rich with plant life and wildlife.

The recent summer of 2013 floods, coupled with the 2012 Waldo Canyon fire and the 2013 Black Forest fire, have resulted in considerable transport of sediment and debris. The floods altered the creek bed, banks, floodplains and structures and have led to extensive flood damage including property and infrastructure damage, erosion and sedimentation that resulted in a net loss of flood capacity. To identify strategies that will mitigate the effects of fire damage and flood damage in the watershed, a holistic restoration planning effort will provide effective and lasting protection of at risk assets, as well as the health, safety and welfare of the public.

### Core Values

Safety

Resiliency

Constructability/Costs

Environment

Community

Schedule

### Critical Issues from Stakeholders

- Concern About Potential Forest Fires
- Concern About Potential Flooding
- Public Health
- Actions in the Upper Watershed Effecting the Lower Watershed
- Emergency Access

- Reduce Future Flood Damage Risk
- Provide Smarter Infrastructure Solutions
- Improve Creek Stability
- Risk to Critical Infrastructure

- Find Funding for Future Implementation
- Fiscally Responsible Costs
- Regional criteria, implementation and enforcement
- Long-term maintenance funding needed
- Minimize Maintenance Requirements and Costs
- The impact of T&E species on constructability

- Reduce Future Sediment Loading and Hydrological Impacts to the Creek Due to 2012 and 2013 forest fires
- Reduce Sedimentation in General
- Improve Water Quality Including Turbidity, E. Coli and Debris
- Improve Wildlife Habitat (banking opportunities)
- Increase Channel Capacity to Accommodate future flooding
- Increase Storm Water Discharge Due to Development
- Work With Natural Systems
- Consistency with MS-4 requirements
- Presence of Endangered Species
- Introduction of new flow to the creek/volume change
- Detention ponds built to out dated design criteria

- Protect Infrastructure, Tourism and the Economy
- Concern About Increased Flood Insurance Costs
- Consider Greenway and Open Space Opportunities
- Communication with the Residents
- Are the Historic CCC Structures of Value or a Risk to Future Flooding
- Need for better Flood Monitoring
- Collaboration Between Agencies and Communities
- Land Use Regulations and Management
- Impact on aesthetics (historical element of USAFA)
- Development Impact
- Economic injustice
- Impact to historic features

- Prioritize Strategies as Critical, Necessary or Desired

### Evaluation Criteria

1. Reduces flood risk to the public and residents by providing long term solutions that increase resiliency?
2. Transfers risks or creates impacts downstream to infrastructure, channel and storm water system?
3. Number of people protected?

4. Physical area of watershed mitigated?
5. Critical Infrastructure at risk?

6. Creates infrastructure investments that are reasonable to construct and provides the best value for their lifecycle, function and purpose?
7. Meets industry and local design standards?
8. Minimizes the effort required to maintain and repair the options?
9. Compatible with forest fire mitigation?

10. Protects the habitat, water quality and geomorphology of Monument Creek?
11. Incorporates locally available materials and environmentally friendly processes?
12. Quantity of sediment reduced?
13. Consistent with MS-4 requirements?

14. Provides access and protects opportunities for enhancements to tourist destinations, community facilities, features and neighborhoods?
15. Provides funding, partnering and collaboration opportunities by meeting multiple objectives?
16. Can be supported by current land use regulations or revised land use regulations?
17. Impacts to water rights?

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# Decision Matrix

**Figure B**

**Monument Creek Watershed Restoration Master Plan Decision Matrix**

Draft 04/20/16

Created utilizing the criteria identified in the Decision Making Flow Chat and a Fair/Better/Best ranking system

ID	Criteria	Options Ranking		
		Project A	Project B	Project C
<div style="text-align: right;"> <span style="border: 1px solid black; padding: 2px;">Fair</span> <span style="border: 1px solid black; padding: 2px; background-color: yellow;">Better</span> <span style="border: 1px solid black; padding: 2px; background-color: green;">Best</span> </div>				
<b>Evaluation Criteria</b>				
1	Reduces flood risk to the public and residents by providing long term solutions that increase resiliency?			
2	Avoids transfer of risks that create impacts downstream to infrastructure, channel and storm water systems?			
3	Number of people protected?			
4	Physical area of watershed mitigated?			
5	Critical Infrastructure at risk?			
6	Creates infrastructure investments that are reasonable to construct and provides the best value for their lifecycle, function and purpose?			
7	Meets or exceeds industry and local design standards?			
8	Minimizes the effort required to maintain and repair the options?			
9	Compatible with forest fire mitigation?			
10	Protects or improves the habitat, water quality and geomorphology of Monument Creek?			
11	Incorporates locally available materials and environmentally friendly processes?			
12	Quantity of sediment reduced?			
13	Consistent with MS-4 requirements?			
14	Does it meet CWCB criteria for multi-objectives program elements?			
15	Provides access, connectivity and protects opportunities for enhancements to tourist destinations, community facilities, features and neighborhoods?			
16	Provides funding, partnering and collaboration opportunities by meeting multiple stakeholder objectives?			
17	Can be supported by current land use regulations or revised land use regulations?			

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# Project Issues

- Overall creek design
- Debris
- Andesite quarry
- Private residences along corridor
- Hall meadows / Split flow
- Longmont diversion
- Old South St Vrain Road bridge
- Ditches
- Additional Issues??

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# What's Next?

- 🏗️ Compilation of issue comments
- 🏗️ Develop evaluation criteria
- 🏗️ Develop alternatives
- 🏗️ Schedule next public meeting
- 🏗️ Post project up-dates to website

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