Lower Fourmile Creek Stream Restoration

Public Meeting
October 26, 2016

Meeting Format:

- **Welcome & Introductions**
- **Presentation**
- **Group forum Q&A session**
- **Open House**

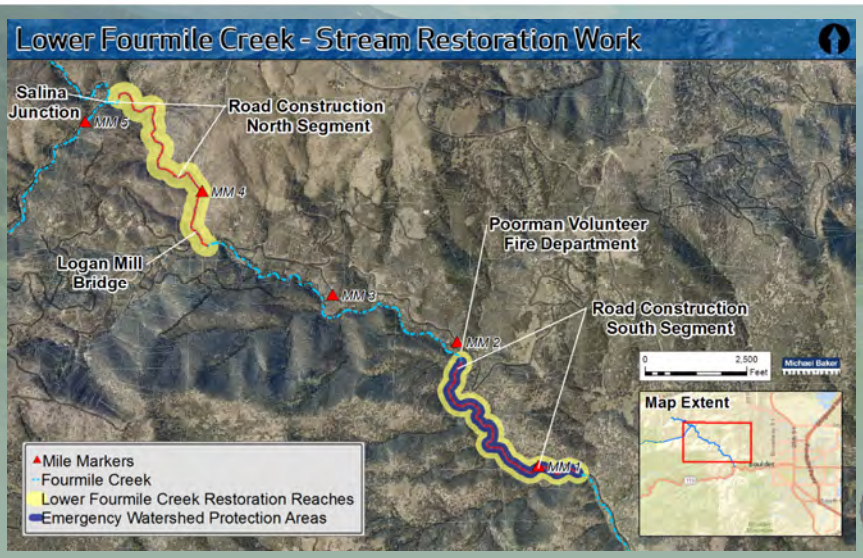
Introduction – Purpose

Why are we here today?

➡ ***Share the Current Stream Design Progress***

➡ ***Obtain community feedback***

Background – Project Limits



Background – Summary of Impacts

- Total project length = 1.5 miles
- Impacts of 2013 Flood
  - Substantially altered creek shape
  - Severely impacted/destroyed aquatic habitat
  - Stripped wetland and riparian vegetation
  - Damaged/destroyed roadway infrastructure and private bridges
  - Damaged/destroyed homes
- Many sub-reaches currently in a state of instability
- Master Plan completed in 2014

Background – Instabilities

Channel bank erosion

Channel incision

Background – Instabilities

Channel widening

Background – Project Purpose

1. Limit Damage to Private Residences
2. Improve Road/Creek Interaction
3. Expedite Recovery
4. Address Additional Damage Since the Flood

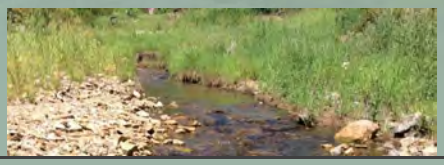
Background – Project Goals

- ✓ Restore the natural channel
- ✓ Design features in context with current watershed setting
- ✓ Restore aquatic and terrestrial habitat
- ✓ Restore ecological connectivity
- ✓ Reduce flood risk
- ✓ Integrate the restoration strategies with the adjacent Fourmile Canyon Drive project

Introduction **Background** Schedule Stream Restoration Project Q&A

Background – End Result

……to make it look like nothing was done



Background – Design Team

- **Natural channel design (Michael Baker)**
- **Ecologic assessment & revegetation (AlpineEco)**
- **Aquatic habitat design (GEI)**

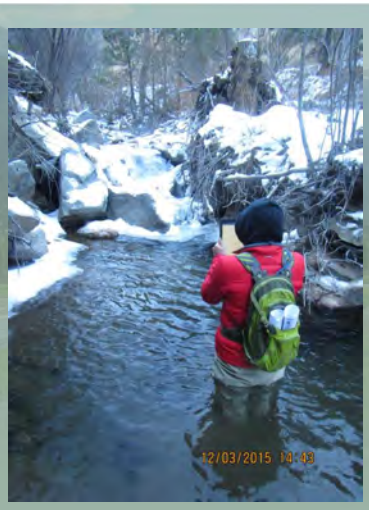
Introduction **Background** Schedule Stream Restoration Project Q&A

Anticipated Project Schedule

- **Final Design Completed – Winter 2016**
- **Permitting – Spring 2017**
- **Begin Construction – Fall 2017**

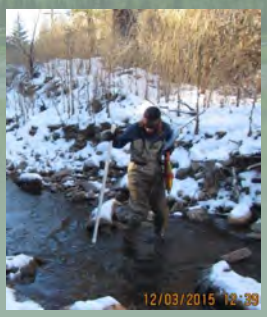
Design Process

1. **Assessment**
2. **Design**
3. **Constructability review**



Stream Assessments

- Assessments are the foundation for design
  - Pre-flood
  - Project reach (post-flood)
  - Reference reaches
- Quantify the degree of impairment
  - Biology
  - Ecology
  - Geomorphology
  - Hydrology
- Formulate a basis of design based on scientific methods



Stream Assessments

- Opportunities
  - Areas to preserve (i.e. stable reaches)
  - Floodplain storage (flood & sediment)
  - Functioning habitat features
  - Additional aquatic and terrestrial habitat
  - Unique watershed features
  - Vegetation
- Constraints
  - Homes
  - Culvert/bridge crossings
  - Roads
  - Utilities, wells, septic systems
  - Ponds

Design Philosophy

Natural Channel Design

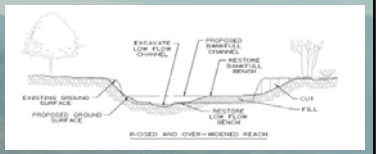
- **To establish physical, chemical, and biological functions of the stream system**
- **Self-regulating**
- **Restore all elements of the stream system**
  - **Vegetation**
  - **Fish habitat**
  - **Floodplain connectivity**

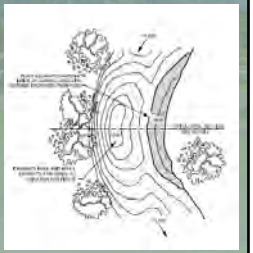
Design Approach

- **Restore Lower Fourmile Creek in the pre -or post-flood channel corridor**
- **Restore the natural channel geometry**
- **Reconnect the channel to the adjacent floodplain where possible**
- **Revegetate the wetland, riparian, and upland zones with ecotypic (native) plant species**
- **Implement structure only where necessary**

Design Steps

1. Identification of areas to preserve (i.e. minimal work)
2. Classify reach type and design approach
3. Apply reference reach survey information
4. Verify with hydraulic and sediment transport modeling
5. Design other elements





Next Steps

- Obtain Participant Agreement
- Final 30% Design
  - Additional design elements
  - Additional detail
  - Visually intuitive to contractor
- Ensure construction feasibility
- Obtain permits
- Contractor selection
- Implementation!
  - Likely through design-build

Participant Agreement Forms

- Required for stream restoration, maintenance, and funding
- For Boulder County stream restoration from 819 to 1767 Fourmile Canyon Drive only
- Won't change anything on private property without permission
- Will provide 24-hour notice (minimum) before entering property
- Operations & Maintenance access for up to 3 years required by grantor

PLEASE SIGN & RETURN BY FRIDAY, OCTOBER 28th

Community Discussion

Questions?

Community Discussion

Open House

Opportunity to ask questions and provide input on designs, such as:

- Are you **comfortable with the proposed improvements** on your property (e.g., where the creek will be located and how it flows/ meanders, in-stream features, bank stabilization, and revegetation)? If not, why? Do you have any **stream restoration customization requests**?
- Do you have a **well or septic system** that is on the creek side of your property? Is it within 50 feet of the current creek alignment? If so, please mark the approximate location on one of the maps.

Community Discussion

Questions & Feedback

Fourmile Creek Recovery and Restoration
http://www.bouldercounty.org/flood/creekrestoration/pages/fourmilecreek.aspx

Contact Boulder County with feedback or questions, to submit a form or to be added to the community list serve:

- Stream Contact: Clarissa Hageman: 303-441-1610, chageman@bouldercounty.org
- Road Contact: Andrew Barth: 303-441-1032 - abarth@bouldercounty.org
- Boulder County Transportation Department, PO Box 471, Boulder, CO 80306

Contact Fourmile Creek Watershed Coalition: Maya MacHamer, 303-449-3333, fourmilewatershed@gmail.com

Please send Participant Agreements in by Friday, October 28th, 2016
We appreciate feedback by Friday, November 4th, 2016