

# Creek Recovery and Floodplain Management

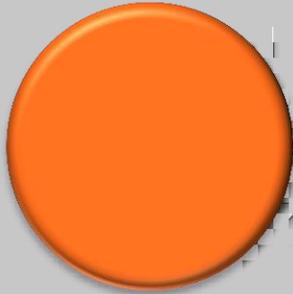
Boulder County  
Planning Commission

**SEPTEMBER 17, 2014**

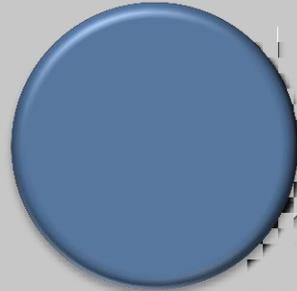




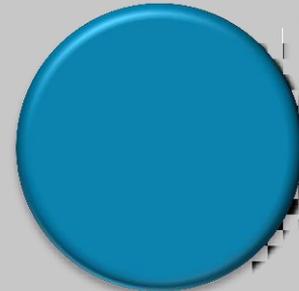
*Flood Response and Recovery Programs*



**Emergency  
Response**



**Short Term  
Recovery**



**Long-Term  
Recovery**

**SEPTEMBER 17, 2014**

# Program Updates

- Debris Removal and High Hazard Mitigation
- Comprehensive Creek Planning Initiative
- Floodplain Management

# Comprehensive Creek Planning Initiative (CCP)



**SEPTEMBER 17, 2014**  
**PROJECT UPDATE**  
**BOULDER COUNTY PLANNING COMMISSION**



# Creek Planning



- Long-Term Creek Recovery
- Watershed Master Plans for major flood-damages drainages throughout county
- To identify creek restoration, flood control, and other resiliency and recovery projects, to position for funding for project implementation



## Boulder County Planning Activities

Little Thompson River Master Plan

St. Vrain Creek Master Plan

Left Hand Creek Master Plan

## Boulder Creek

- Fourmile Creek Master Plan
- Boulder Creek, city of Boulder to confluence (UDFCD)

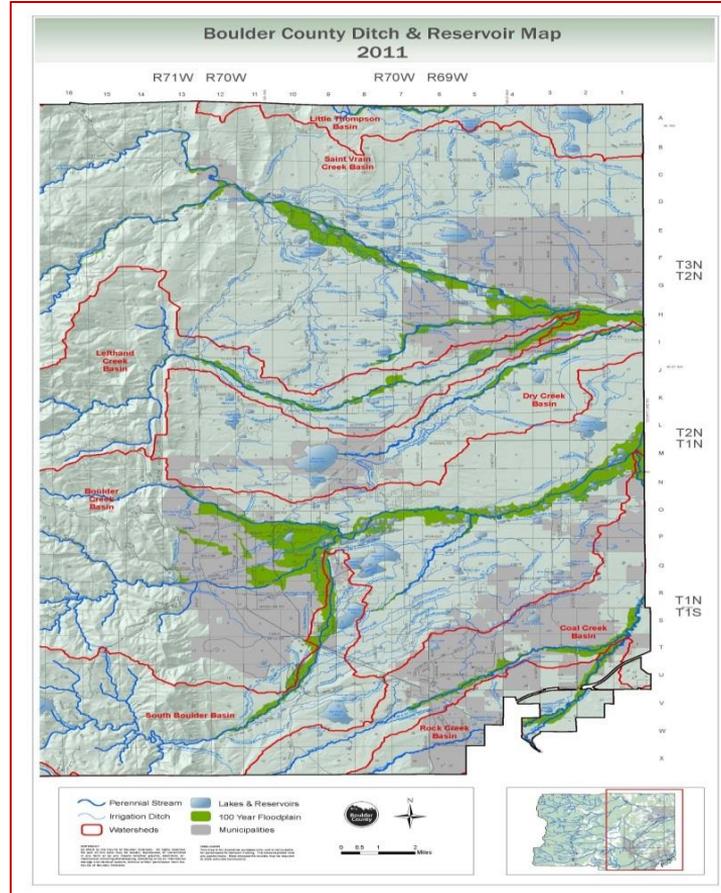
## South Boulder Creek

- Major drainageway planning for South Boulder Creek flood mitigation (UDFCD)\*

## Coal Creek & Rock Creek

- Upper Coal Creek Master Plan
- Coal Creek/Rock Creek, Major Drainageway and Planning Study and Flood Hazard Area Delineation (UDFCD)\*

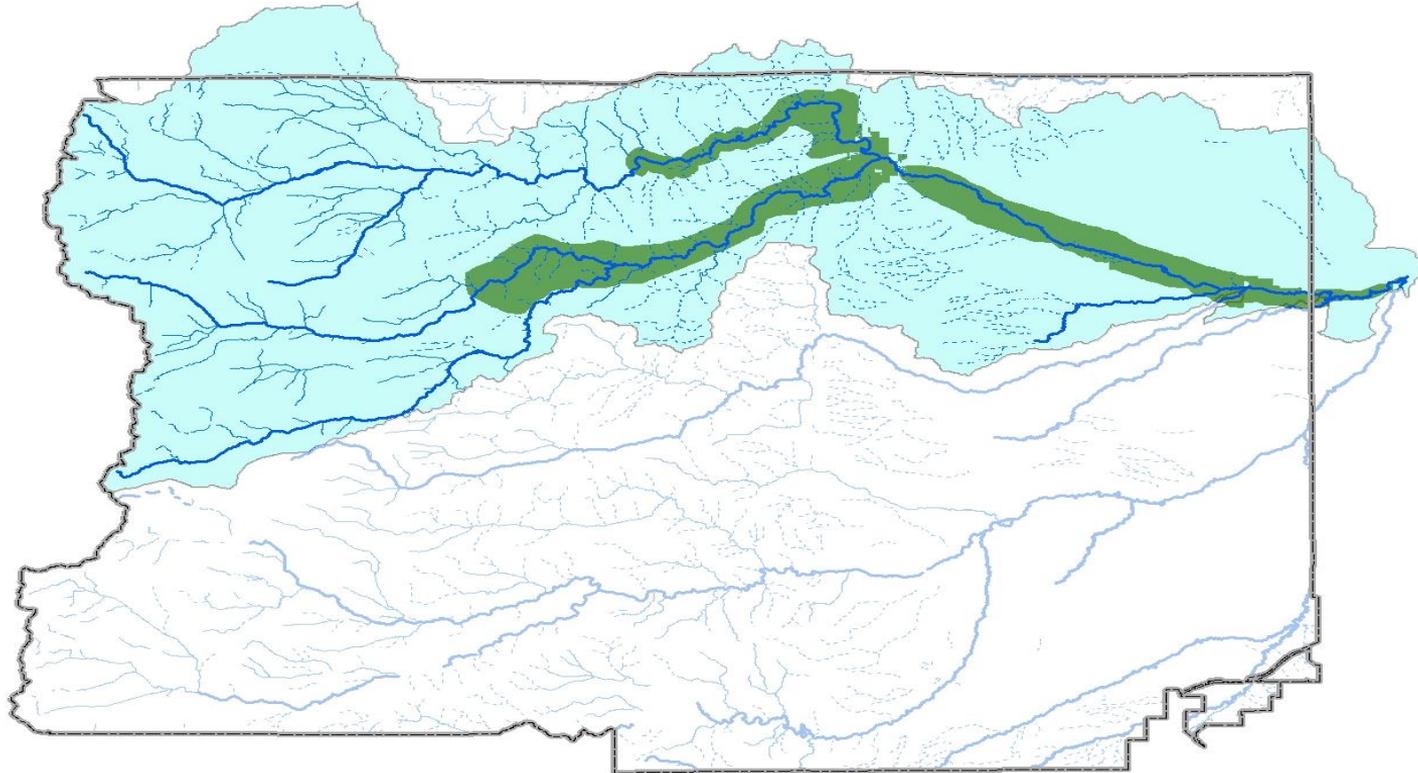
\*Studies begun before the September 2013 flood



# Boulder County Master Plans

	St. Vrain Creek	Left Hand Creek	Four Mile Creek
<b>Watershed Characteristics</b>	Large watershed, several critical drainages, mountains to plains, rural town, one urban area, public lands	Several critical drainages, canyons to plains, mountain towns, rural subdivisions, public lands	Major drainage to Boulder Creek, canyon, historic mountain communities, public lands
<b>Coalition Composition</b>	8 members, public agencies	30+ members, public agencies, non-governmental entities, possible expansion	Coordinated with Boulder Creek Coalition, 6 agencies for lower Boulder Creek study, with UDFCD
<b>Community Engagement</b>	Large public forums, reach-specific meetings	Neighborhood – level discussions	Outreach to individuals, community leaders

## St Vrain Creek Watershed Master Plan Geographic Study Area



-  Boulder County
-  St Vrain Watershed
-  Master Plan Study Area

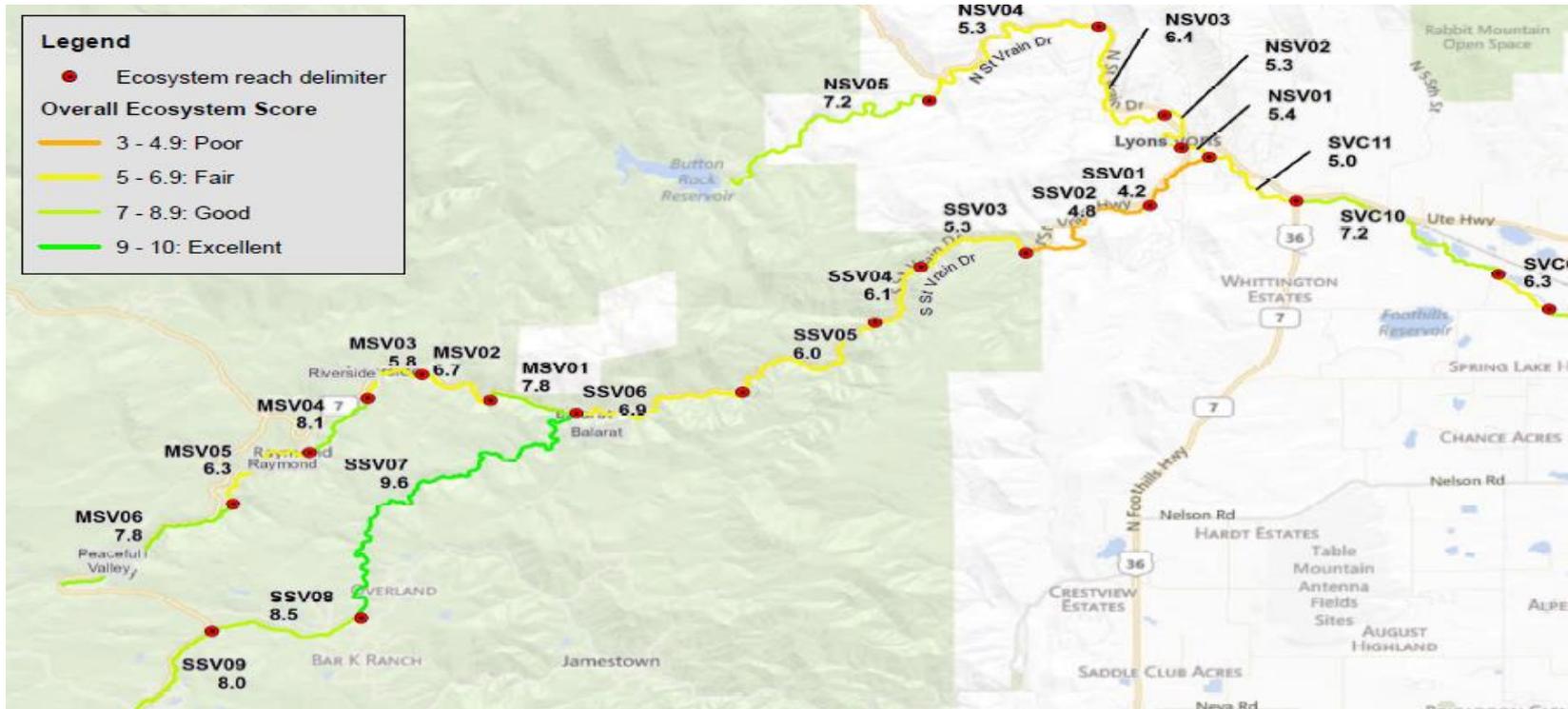
# St. Vrain Watershed Master Plan

## Plan Status

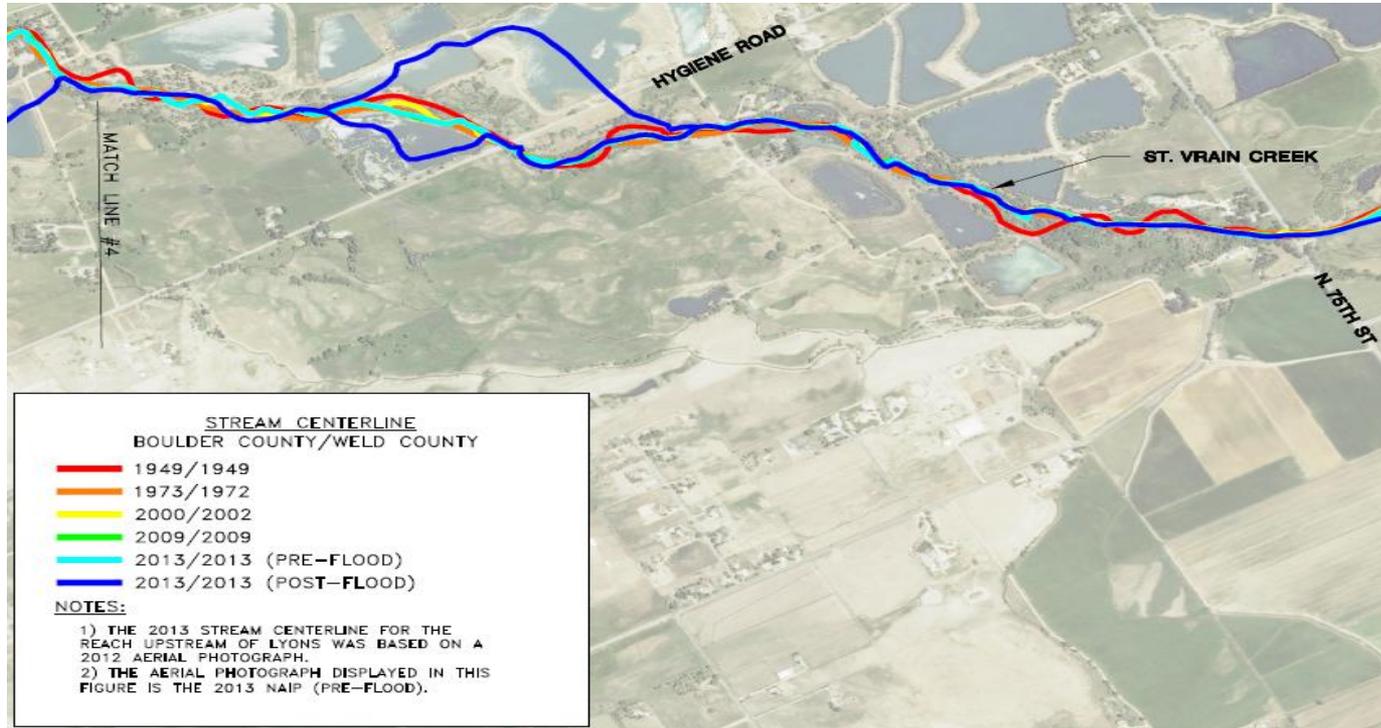
- Kick-off community meetings were held in June, 200 participants
- Fieldwork is complete (geomorphic and ecological risk assessment)
- Survey and hydraulic analysis in progress for specific reaches
- Draft alternatives released for review and input
  - Coalition agencies
  - Community meetings
- Draft Master Plan to be available in late October
- Final Master Plan and public meeting in November



# St. Vrain Watershed- Ecological Assessment



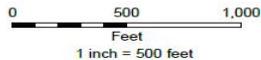
# St. Vrain Watershed- Historical Channel



# St. Vrain Watershed- Geomorphic Analysis



NAD 1983 HARN StatePlane Colorado North FIPS 0501 Feet



**aWalsh**  
Engineering and Environmental Programs

	Reach Break		Active Channel		Adjacent Map
	Modern Valley Bottom		Avulsion Hazard Zone		Erosion Hazard Area
	Alluvial Fan		Disconnected Migration Area		No Data

**Figure 7**  
**Draft Geomorphic Hazard Zones**  
St. Vrain Creek System - St. Vrain  
Boulder County, Colorado

# St. Vrain Watershed- Alternatives



- Includes stream alignment alternatives
- Informed by ecological and risk assessments
- Identify projects associated with each alternative



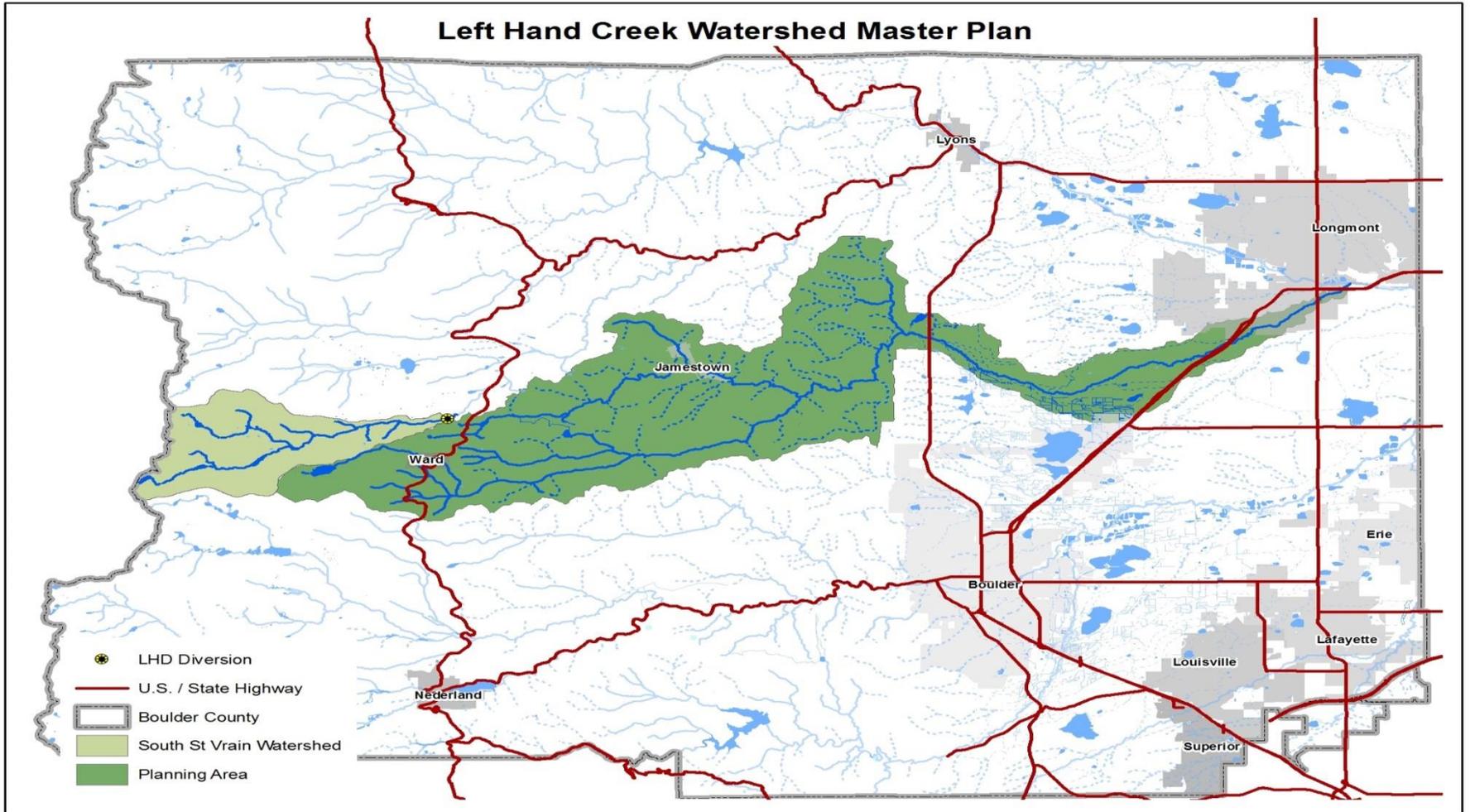
# St. Vrain Watershed Community Meetings



- **Four Community Workshops:**
  - 9/15- Reaches 1 & 2- Longmont and ECL to Confluence (Weld Co.)
  - 9/18- Reaches 4 & 5- Lyons, Apple Valley, North St. Vrain, South St. Vrain
  - 9/22- Reaches 6 & 7- Raymond/Riverside
  - 9/24- Reach 3- Between Lyons and Longmont
- Meetings will discuss draft alternatives and gather input for final planning recommendations



# Left Hand Creek Watershed Master Plan



# Left Hand Watershed Master Plan

## Plan Status

- Kick-off community meetings held in July/August, 150 participants
- Field work complete (geomorphic and ecological risk assessments, field interviews)
- Coordination with final road design, public meeting for road design 9/17
- Draft plan and community meetings for feedback in mid October
- Final master plan complete in mid November



# Risk Assessments – Geomorphic

## ■ 6 Different River Styles for the Left Hand Drainage:

1. Headwater
2. Confined Valley with Bedrock-Controlled Floodplain Pockets
3. Confined Valley, No Floodplain
4. Partly confined, wandering
5. Unconfined, Continuous Floodplain
6. Entrenched, Residential Channel

# Risk Assessments – Geomorphic

- **Geomorphic Condition**
  - **Criteria to evaluate each reach**
  - **Good, Fair, Poor**

## Confined Valley, no floodplain

### Good

- Vertically and laterally Stable
- Little man-made armor
- Intact riparian vegetation
- Structural wood present
- Well-established bedforms (step-pool sequences with rapid and cascade elements)
- Clean gravels (low embeddedness) organized in instream units
- Fines present, but exist as transient deposits

### Fair

- Eroding Banks (fluvial)
- Degraded riparian veg.
- Armor (riprap, concrete) present in few locations
- Large wood in channel, but may not be structural
- Fines present but organized in bedforms (moderate embeddedness)
- Bedforms present but not stable

### Poor

- Banks destroyed by mass wasting
- Little riparian veg.
- Banks heavily armored, grouted riprap used
- Channel stripped of large wood
- High embeddedness
- Channel bedforms absent

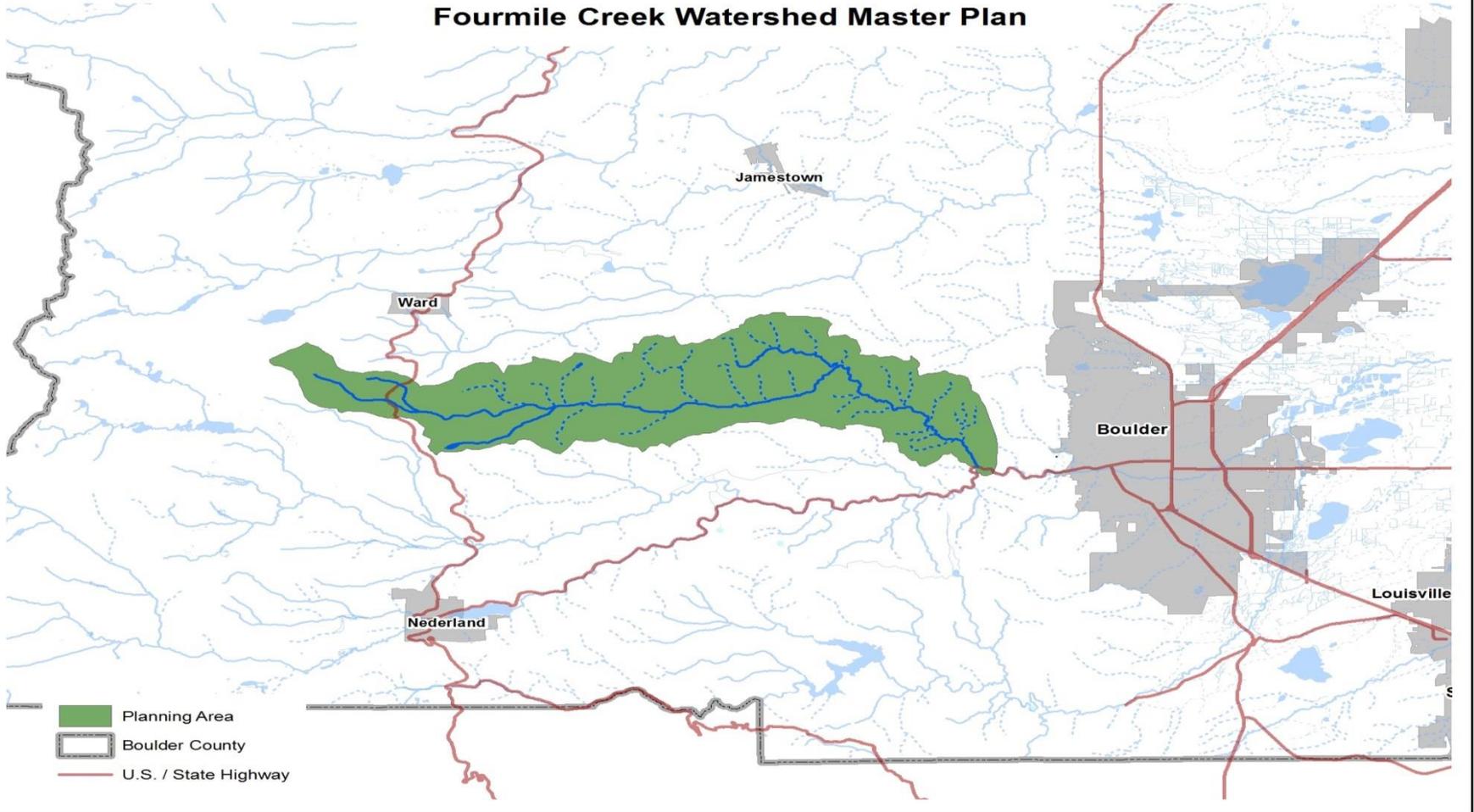
# Left Hand Watershed- Interview Themes



- Reduce sediment transport and deposition
- Remove woody debris
- Provide water for irrigation
- Protect infrastructure and inform design and construction activities
- Improve safety to residents
- Restore aquatic habitat/fisheries and riparian habitat
- Recommend stream channel design
- Protect natural setting/quality of life
- Improving/protecting water quality



# Fourmile Creek Watershed Master Plan



# Fourmile Creek Master Plan

## Plan Status

- Kick-off community meeting held on 9/3, 60 participants, joint meeting with road project
- Field work in progress (risk analysis, ecological and geomorphic assessments, field interviews)
- Hydraulic modeling in progress with special attention paid to private crossings
- Draft alternatives to be complete by 10/31
- Community meetings to get feedback planned for the week of 11/3
- Final master plan complete by 12/3



# Fourmile Creek-Interview Themes



- Protect homes and other key infrastructure
- Inform roadway and private access design and construction activities
- Ensure access to water
- Incorporate impacts from the Fourmile Fire
- Consider abandoned mine impacts
- Protect water quality
- Prevent and/or mitigate mud flows and sediment loading
- Prevent and/or mitigate channel erosion or migration
- Maintain historic aesthetic of communities
- Restore aquatic and riparian habitat



# Boulder Creek Master Plan

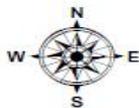
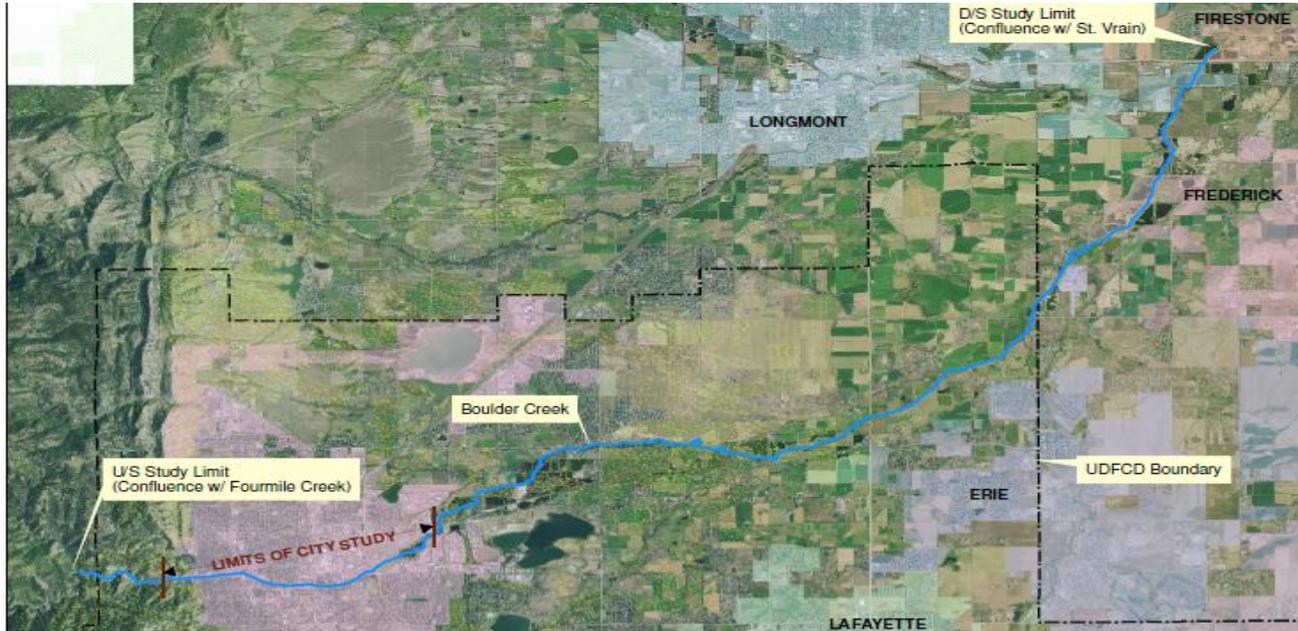
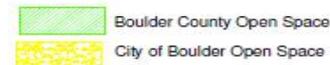


EXHIBIT A  
Boulder Creek Mitigation Plan  
Approximate Study Limits  
March 2014



## Plan Status

- Funding agreement developed with UDFCD
- RFP released
- Consultant selected by end of October



# What's Next?



- **County plan adoption**
  - Parks and Open Space Advisory Board
  - Planning Commission
  - Board of County Commissioners
- **Funding applications**
- **Post-master plan watershed organization**



# CCP Contacts



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