Case Studies:
Westerly Creek at MLK Blvd
and
Big Dry Creek at Cheese Ranch

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Senior Construction Manager
Design, Construction and Maintenance Program
Established 1969 = 46 years

Area = 1608 mi²

Total Streams = 1600 miles
7 Counties & 32 Municipalities

4 Programs
• Master Planning
• Design, Const, and Maintenance
• Floodplain Management
• Information Services & Flood Warning

$22 Million Annual Budget
Project Process

How are potential projects identified?

• Annual request letters sent to local government
• Local government coordinates with Public Works, Parks, other depts, citizen complaints
• May be based on UDFCD knowledge of existing conditions/problems
• Local government prioritizes each request. Projects selected based on priority and funding limits.

How are projects funded?

• Larger projects may be done on a cost-share basis
• UDFCD may fully fund project
• Outside funding by others; grants such as GOCO.
What is Healthy?

Stream Health is Essential for Function

- Preservation of natural hydrologic regime.
- Geomorphically stable stream dimension, pattern, and profile that neither aggrades nor degrades.
- Herbaceous and woody community cover, structure, and diversity.
- The assembly of biotic and abiotic components along the stream that launches the system on the right trajectory.
Project Design

Design Team

UDFCD Project Manager, Construction Manager, Local Government representative (Public Works, Parks (RLA), Environmental Consultant, and Consultant Engineer, and Contractor (for project partners projects)

- Consultant engineer chosen by UDFCD and Local Government
- UDFCD “On-Call” Engineering Consultants
- Institutional/In-House Knowledge and Experience

Scoping meeting held with all partners. Consulting engineer prepares design and team reconvenes at various benchmarks (30/60/90%).
Permits

**FEDERAL:**
- 404 Permit
  - Individual
  - Regional General
  - Nationwide (Requires Pre-Construction Notification (PCN))

May require:
- Wetlands Delineation/Quantification of Impact to Wetlands/Waters of the U.S.
- Threatened and Endangered Species
- Cultural Surveys

**STATE:**
- CDPHE Stormwater Construction Permit for sites over 1 acre of disturbance (includes staging, access, and work area)
- CDPHE Construction Dewatering Operations Permit (may require research)
- Colorado Division of Water Resources (State Engineer’s Office) – NOI to Construct Dewatering Well(s) – GWS-62

**LOCAL:**
- Floodplain Permit – “No Rise Certificate”
- Local Erosion Control Permit (CASDP in Denver, GESC in Douglas County)
- Right-of-Way, Sewer Use & Discharge Permit, Export Variance, Street Occupancy, etc., etc. !
- Contractor Licensed to work in this municipality?
Westerly Creek at MLK Blvd
Westerly Creek

- Watershed: 8 mi long by 3 mi wide
- Old Stapleton International Airport and Lowry Air Force Base = Last major infill within City of Denver
- Continuing to construct residential and industrial/commercial
- Rapid Urbanization and increased stormwater runoff
- Open Space Region with trails connecting to Sand Creek at northern limit
Rapid Development (20 years)
Westerly Creek at MLK Blvd

- Redesign/reconstruction of a Developer-built channel.
- Former channel was undersized
- Channel downcut and bank erosion
- Standing water, exposed utilities,
- Loss of hydraulic connectivity to floodplain

Project Description:
- 1250 Lineal Feet of Channel Realignment and Regrading
- 3 Riffle Drop Structure
- 1 Boulder Cascade Drop Structure
- Soil Lift Bank Stabilization
- Pre-formed scour holes
- Increased sinuosity
- Native Grass Revegetation including Prairie Cordgrass Sod

Project Cost: $580,983.00
Pre-Const Scour/Erosion
Pre-Const
Upstream Section
Downstream Section
Construction
Stream Stabilization
Site Dewatering
Construction
Post Construction
Lessons Learned

• Water Control – Adaptive Management
• Construction Footprint – Minimize for ecological and permit reasons
• Biggest Headache was trying to reconstruct irrigation system pieced together by 3 different developers
• Test site for Prairie Cordgrass “sod” installation
• High-end neighborhood with constant resident “input” – Safety Fencing with Privacy Screen
• Post-construction Weed and Vegetation Management
Big Dry Creek at Cheese Ranch
Site Location
Looking upstream at LHB
Downstream from Bridge
Site Access
Unknown Utilities
Storm Damage
Subgrade & Structural Damage
Sept 2013 Flood
Lessons Learned

Do your homework:

• Proactive approach with residents, trails and greenbelt/open space users – use door hangers, Parks/Public Works/City websites, project signs, etc. Keep information current!

• Don’t always rely on utility locators/engineering drawings to always show the correct alignment, depth, or number of buried utilities. Be proactive – potholing can save time and money. Include utility providers in pre-construction and progress meeting.

• Plan for the worst case scenario with water control at all time – don’t try to outguess the weather – it can be miles away and still impact you!

• Ensure you have room in the construction/design budgets (contingency) to account for unexpected delays, design and construction problems.
Questions

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