DRY CREEK CHANNEL REALIGNMENT AND RIPARIAN RESTORATION

Salt Lake County, UT

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History of Watershed - Aerial Photos

1937  1958  1996

FLOW

DRY CREEK PRIOR TO RESTORATION

- Low Sinuosity (1.02)
- High Gradient (1-7%)
- Channel Downcutting
- Disconnected Floodplain
- Widespread Death of Riparian Vegetation
- Recreational Safety Issues
PRE-DESIGN STEPS

• Kickoff Meetings
• Compilation of Existing Data
• Supplemental Surveys
• Rainfall-Runoff Modeling
  \[ Q_2 = 30 \text{ cfs} \]
• HEC-RAS Modeling of Existing Conditions
Aerial Photos

*Convert existing “G” type to “C” type channel to jumpstart the process leading to a stable morphological form*

- Increase Sinuosity
- Reduce Entrenchment
- Increase W/D Ratio
- Reduce Gradient
- Establish Riffle-Pool Sequences

- Increase Sinuosity to 1.40 (from 1.02)
- Reduce Gradient to 1.5%
- Increase W/D Ratio to ~15 (from ~5)
- Reduce Entrenchment; 2-yr Flow Level to Overbank
- Introduce Pool-Riffle Sequencing
Pool length, width and depth variable on stream size

Variable bioengineering bank treatments

Approach

Point Bar

Tailout

Grade Control

Randomly Placed Boulders

Concave Bend Pool

Plan View

NTS
TUBE-CONTAINER GROWN WILLOWS

- Creation of Five Wetland Areas (0.7 acres)
- 110 Native Trees and 1155 Shrubs in Restored Floodplain
- 10 Acres of Riparian and Upland Seeding

CHANNEL REALIGNMENT

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- 10 Acres of Riparian and Upland Seeding
FLOW-THROUGH WETLAND CREATION
BACKWATER WETLAND CREATION

ENERGY DISSIPATION AND SEDIMENTATION STRUCTURE
CONSTRUCTION
Mobilization – January 2003
100 Day Construction Period
CONSTRUCTION

MONITORING

1) during and after snowmelt runoff season of 2003
2) during and after 2-yr rain storm in autumn of 2003
3) for at least three more years
**MONITORING**

**SEDIMENTATION BASIN**
- 800+ CY of Sediment Captured from End of Construction to Autumn 2003
- Velocities Downstream of Structure Monitored

**MONITORING**

**STREAM CHANNEL**
- Cross Sections
- Velocities
- Streambed Substrate
  - at riffle areas
  - at pools
- Limited Erosion
CONCLUSIONS

• Pre-existing data should be thoroughly checked for accuracy prior to use.

• Stream restoration in urban areas can be successful as long as prevailing conditions outside the project reach are accounted for in design.