



# 3 Rivers Wet Weather Stream Restoration Workshop

Contractor's Perspective to Stream Restoration

Steve Fabian and Robin Ernst  
Meadville Land Service, Inc.



# Contractor's Perspective to Stream Restoration

## Why Are These Jobs Different Than Others

Site Access

Site Conditions

Cobble/Riffle Material

Staging Areas

Stream Flow

Woody Debris

Haul Roads

Closures

Riparian Buffers

Bridges

Wildlife

Native Vegetation

Utilities

Equipment

Planting

Adaptive Management

Imbricated Stone



# Qualifications

Unique, specialty work

Prequalification process for some agencies to bid

Relevant experience provided with bid

# Engineers and Designers

Need to have professionals that are experienced in restoration design

Involvement with construction





# Site Access

Typically restricted due to topography

Usually few points to enter site

Impacts sequence of construction

Influences size and number of crews





# Site Access

Can be very limited due to adjacent features, right-of-way, and property lines

Minimize disturbance





# Staging Areas

May be very limited due to available space

Usually kept small to avoid increasing LOD and disturbance

Restrictions within floodplain

Limits amount of material that can be stockpiled which can effect production

Innovative approaches to access





# Haul Roads

Often follow utility right-of-way

Importance of maintenance given site conditions and amount of use

Mulch, wood mats, steel plates





# Bridges

Usually have to cross the stream

Normally cheaper than culvert crossings and do not have as much risk of blockages

Air bridges over utility lines







# Utilities

Usually there are utilities present within stream corridor

Design normally takes their locations into account, but sometimes unavoidable





# Adaptive Management

Streams are dynamic systems that are always changing

Conditions at construction could differ considerably compared to at time of design





# Site Conditions

Floodplain, hydric soils, sediments

Sites can frequently be inundated with water

Delays while waiting for work areas to dry





# Stream Flow

Flows can increase substantially in short amount of time based on the size of watershed and tributaries

May not be raining at the site but water levels can rise from storm events, utility work or maintenance work occurring upstream

Can take several days for water levels to recede back to rate which can be pumped/managed

Utilize pump(s) that can handle some amount more than a base flow





# Closure Periods

Most streams have closure periods which restrict work

Based on fish spawning and migration

March 1 – June 15

June 1 – September 30

October 1 – April 30

March 1 – May 31

April 15 – October 15

Can have a great impact on schedule





# Closure Periods

Not always feasible to put additional resources on a project due to site constraints

Needs to be considered when determining contract time



# Wildlife

Relocate outside of the work area

Protect habitat





# Equipment

Track equipment, low ground pressure

Excavator with hydraulic thumb is essential

Track trucks for hauling material







# Imbricated Stone

Large, blocky pieces of stone

Availability and cost

Steel body trucks





# Imbricated Stone

Can not stack angular riprap or get tight joints

Like putting together a jig saw puzzle





# Cobble/Riffle Material

Salvage on-site material when possible

Round cobble cost and stability

Mixture of cobble, riprap and gravel



# Woody Debris

Creates habitat and diversity

Adds roughness to floodplain

Cost savings by not exporting



# Woody Debris





# Riparian Buffers

Stabilizes streambank and floodplain to prevent erosion

Provides habitat and food for wildlife

Reduces and filters runoff





# Riparian Buffers

Shades stream to keep water temperatures low

Adds nutrients to the stream



# Native Vegetation

Adapted to specific regions - climate, soils, timing of rainfall, drought, frost

Low maintenance - less time and less cost

Hardiness - ruggedness and more resistance to drought, insects and disease

Ecological value - provide habitat and forage for wildlife





# Native Vegetation

Native seed establishment takes 2 to 3 years,  
results are not immediate

Does not appear manicured or symmetrical,  
many species are bunch/clump type plants

Research plant suppliers and use material  
that is readily available



# Planting



Questions/Comments