Colvin Run Phase II @ Lake Fairfax

Stream Restoration Project

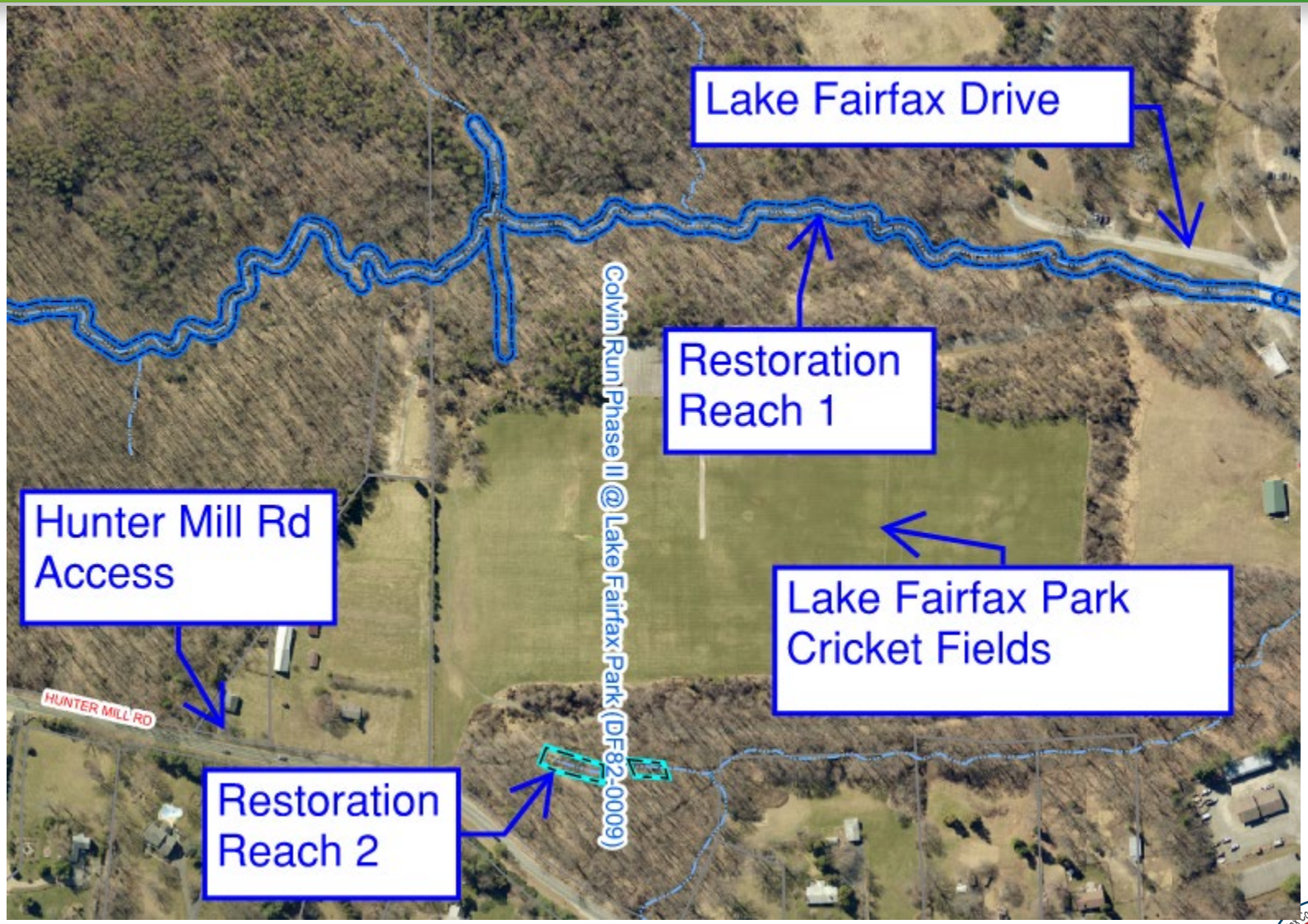
Department of Public Works and Environmental Services

Working for You!

A Fairfax County, VA, publication

August 30, 2022

Project Area



Project Design and Construction Team

- Stormwater Planning Division
- Fairfax County Park Authority
- Utilities Design and Construction Division
- Maintenance and Stormwater Management Division
- Urban Forest Management Division
- Land Development Services
- Fairfax County Board of Supervisors
- Wetland Studies and Solutions, Inc.
- Construction Contractor – To Be Determined during Construction Contracting Phase

Restoration Project Goals

Goal: Improve water quality through restoration of approximately 7,600 feet of stream by returning the physical characteristics of the channel to dynamic equilibrium and enhancing the ecological functions and processes within the riparian corridor.

Objectives:

- Sustainability
- Floodplain connectivity
- Grade control
- Hyporheic Zone enhancement
- Bioengineering
- Infrastructure protection
- Stakeholder coordination

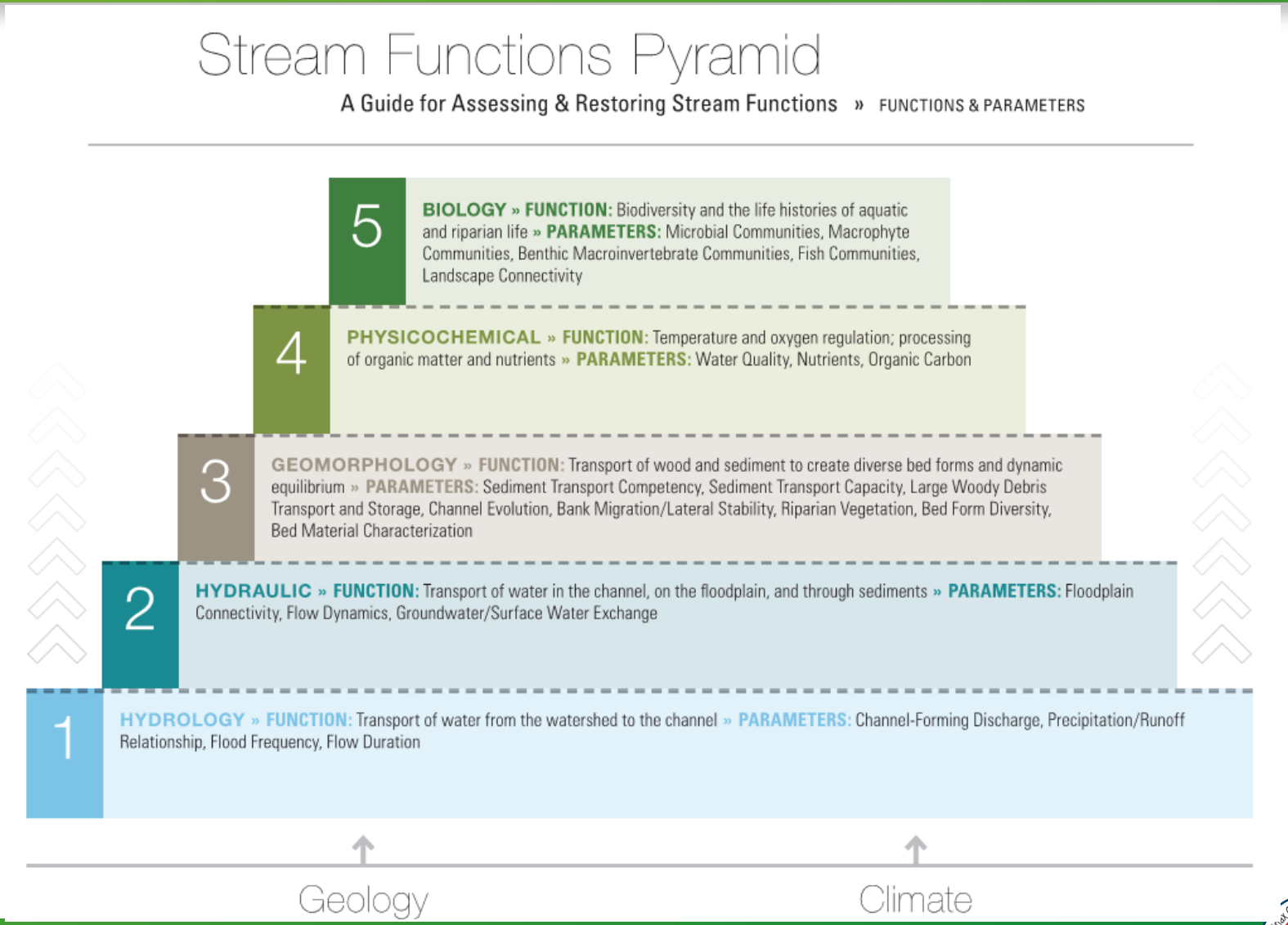
Restoration Project Social Goals

1. Maintain open communication and share information.

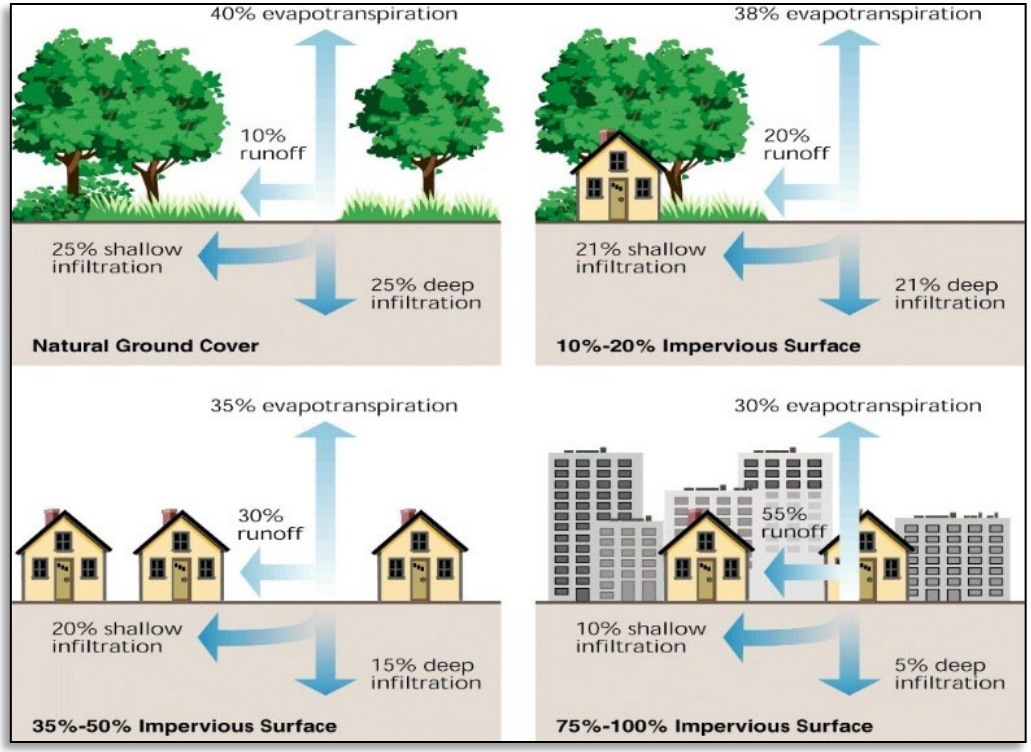
2. Coordinate design and construction with property owner, community and stakeholders.

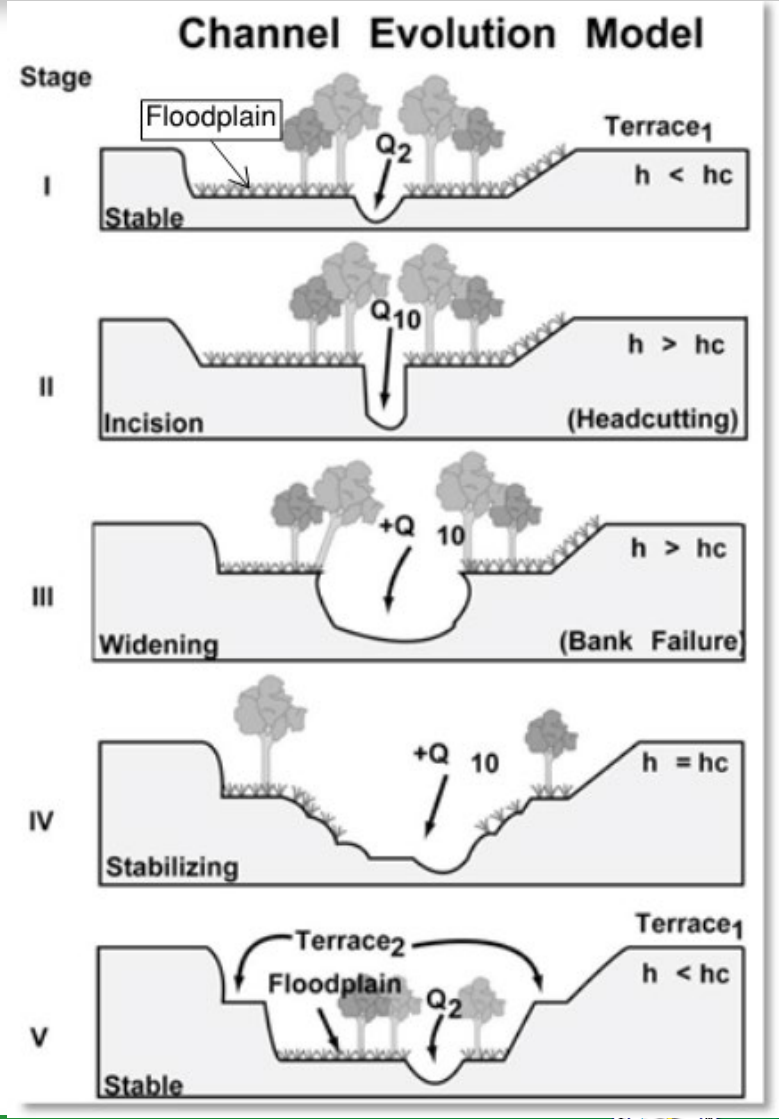
3. The restoration project as a resource for residents; improve access/safety and park user's experience, preservation of land and natural resources, improve water quality, improve riparian habitat, educational opportunities…

Stream Restoration Functions

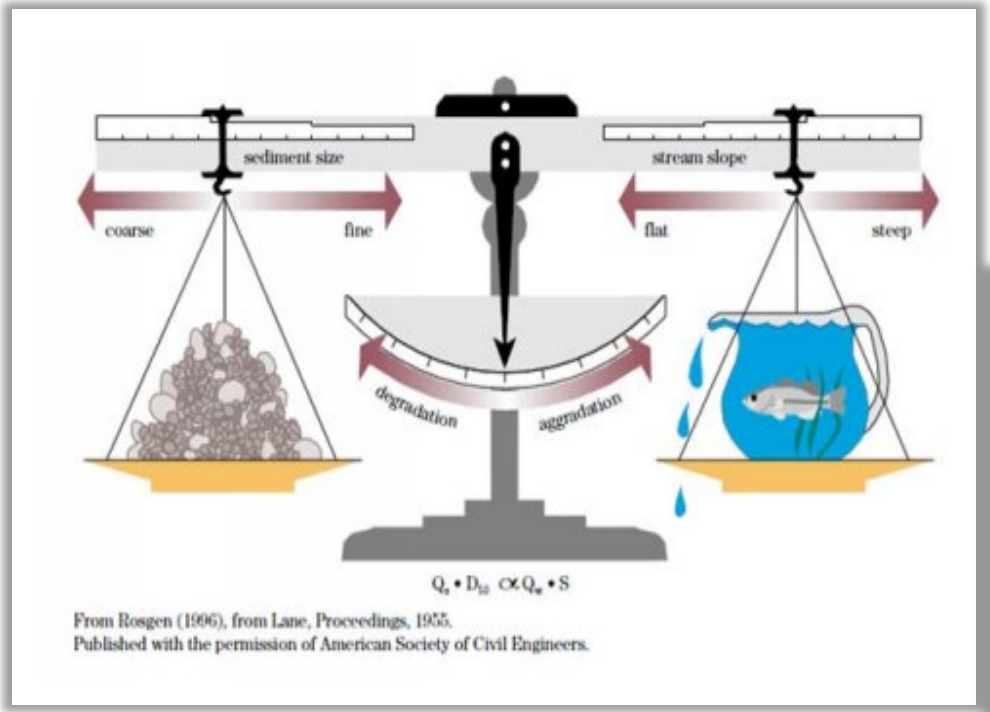


Hydrology and Hydraulic

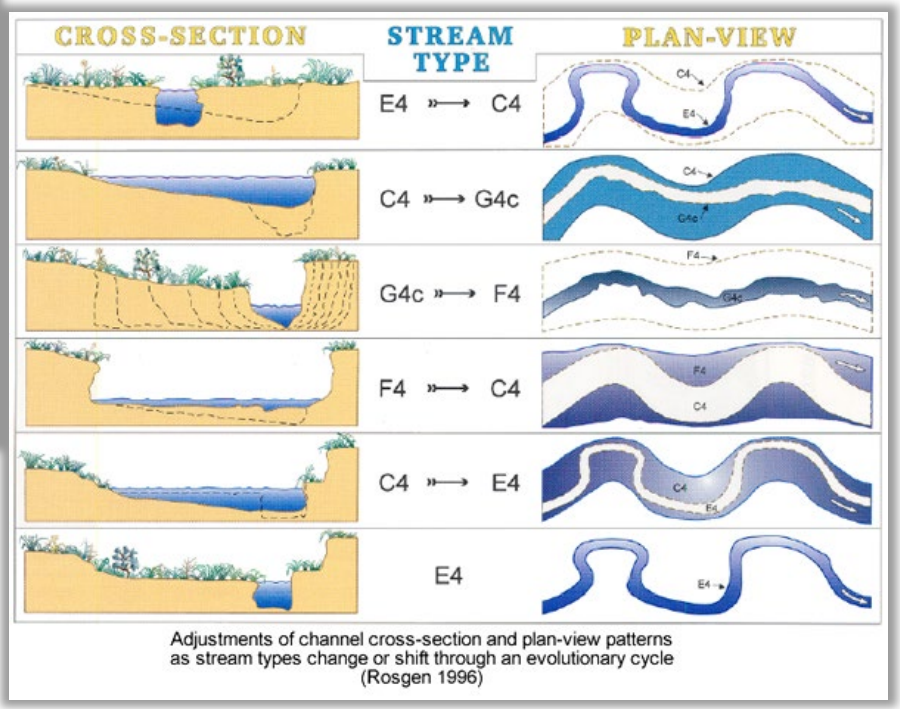




Geomorphology



From Rosgen (1996), from Lane, Proceedings, 1955.
Published with the permission of American Society of Civil Engineers.



Adjustments of channel cross-section and plan-view patterns as stream types change or shift through an evolutionary cycle (Rosgen 1996)

Restoration Strategies Example, Crook Branch

- Floodplain Reconnection
- Grade control
- Enhance hyporheic zone
- Stable vegetated banks

Stormwater Program Drivers

- Clean Water Act, 1972
  - Municipal Separate Storm Sewer Permit (MS-4)
  - Chesapeake Bay Total Maximum Daily Loads (TMDL)
    - Regulates amount of pollutants in waterways (Chloride, Nitrogen, Phosphorus, Suspended Solids, PCBs, etc…)
  - Local TMDLs (sediment, bacteria, and PCBs)
  - Erosion and Sediment Control
- Inspection and maintenance
- Dam Safety
- FEMA/Floodplain programs
- Emergency and Flood Response
- Watershed planning, monitoring, evaluation, project implementation

Water Quality Benefits

- Annual Pollutant Load Reductions via erosion prevention, hyporheic zone biogeochemical processes and floodplain connectivity/storage:
  - Phosphorous: 245.71 lbs./yr.
  - Nitrogen: 913 lbs./yr.
  - Total Suspended Solids: 78,904.62 lbs/yr.

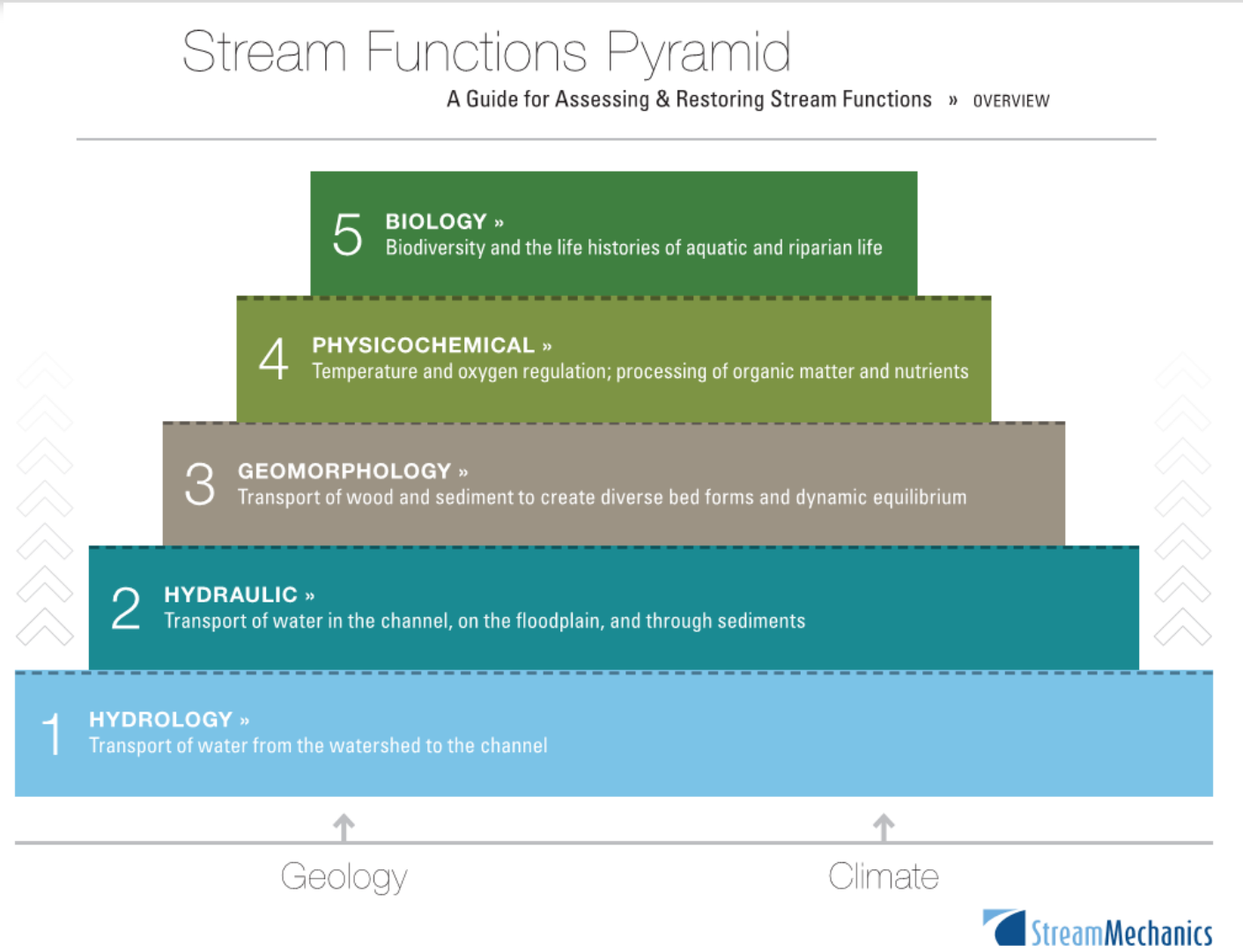
Existing Conditions

Existing Conditions

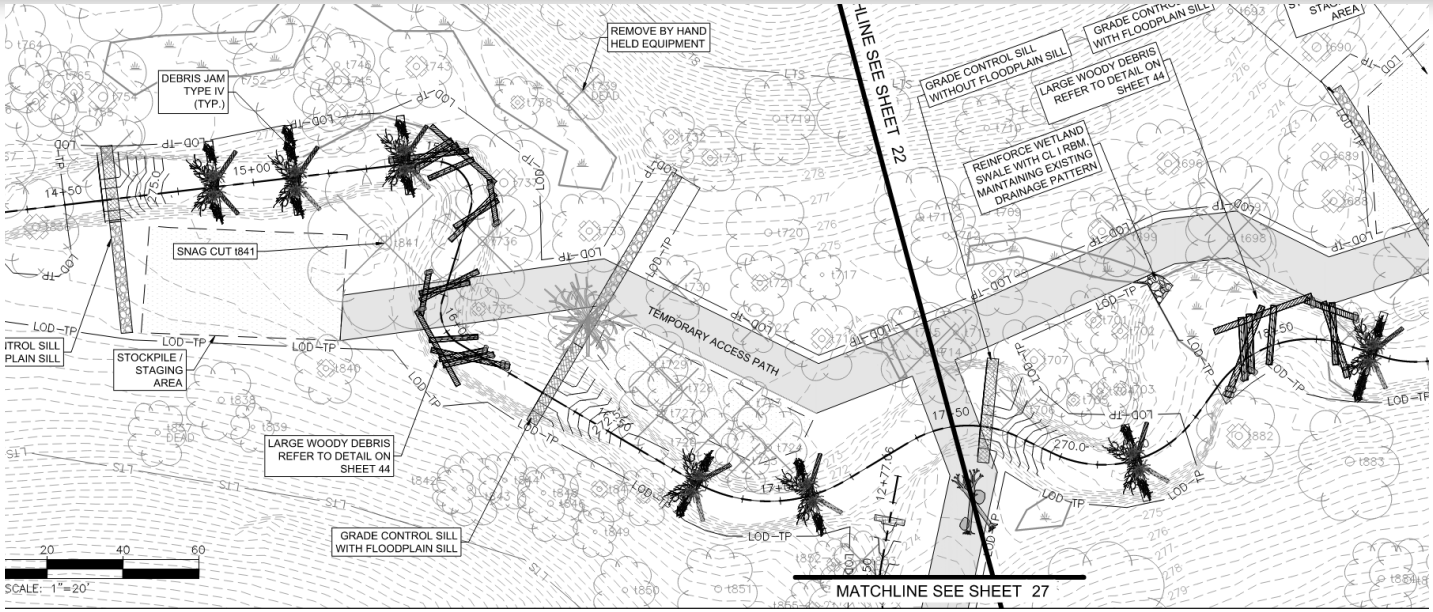
Existing Conditions

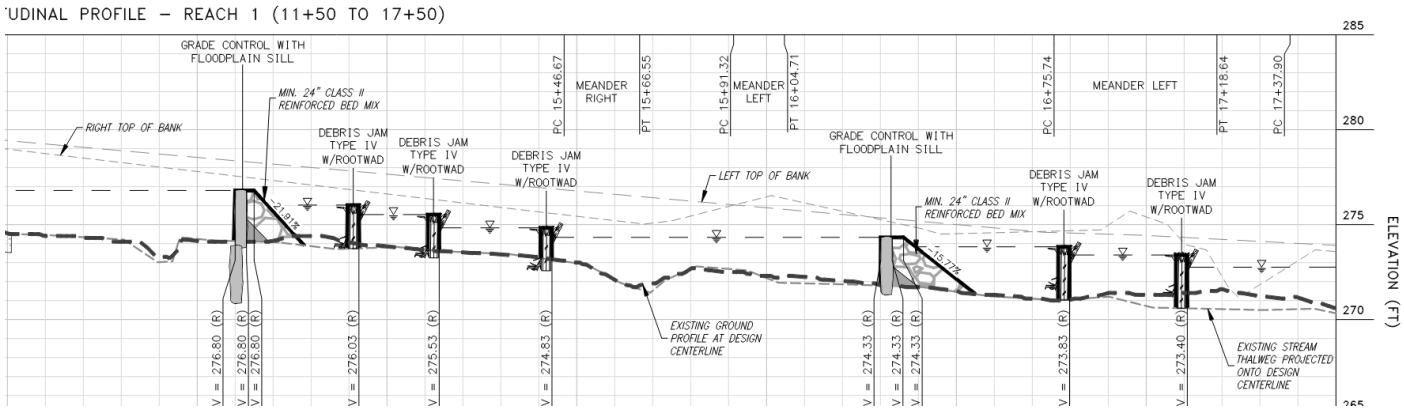
Existing Conditions

Design Development

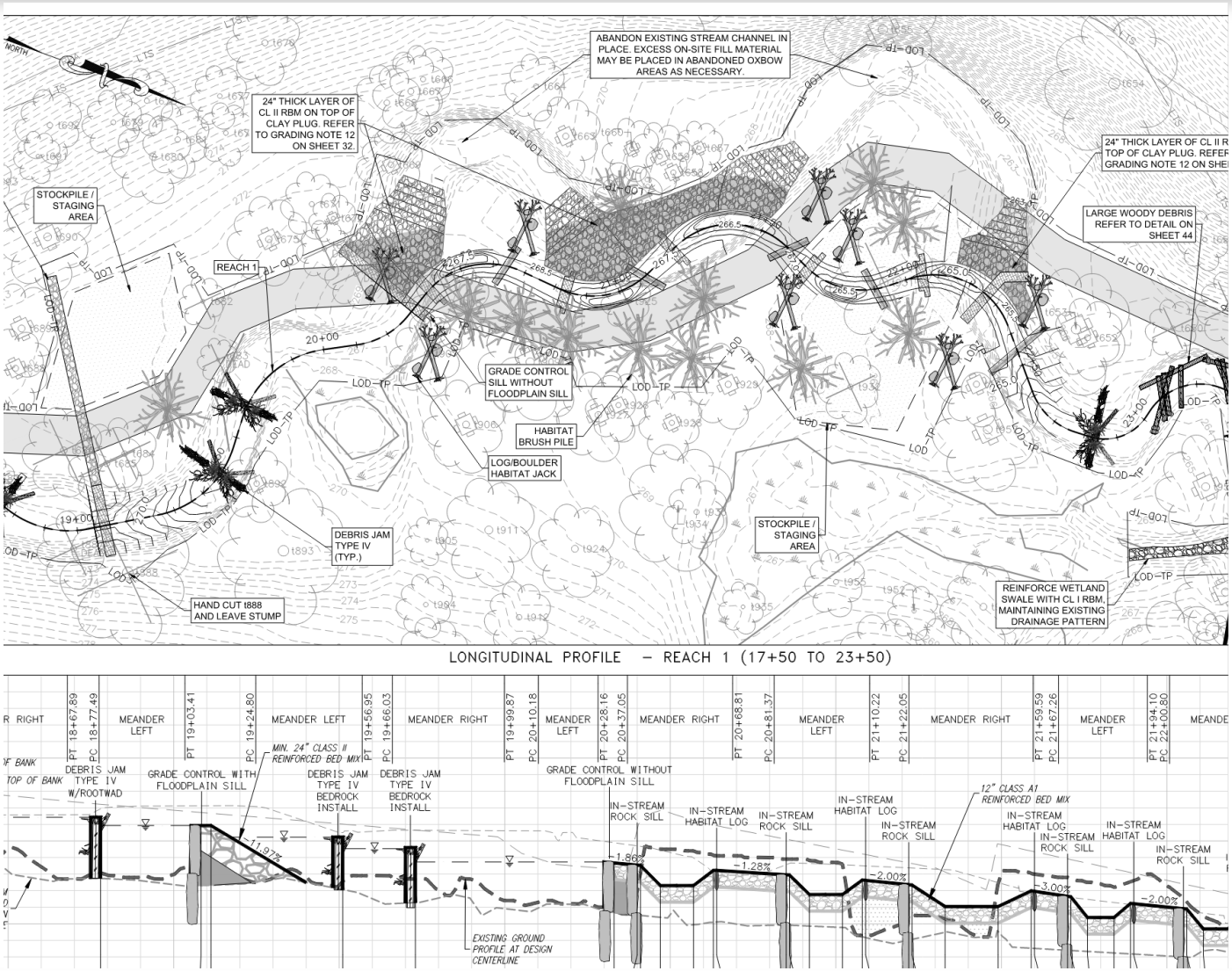


Final Design - Grading Plan Sheet 1 of 7





Final Design - Grading Plan Sheet 2 of 7



Natural Channel Design Features

Step Pools

Cross Vanes

Reinforced Bed & Riffle Grade Control

Native Vegetation

Construction Access

Construction Example

Restoration Example –During Construction

Restoration Example – 6 Weeks After Construction

Restoration Example – One Year After Construction

Restoration Example – Three Years After Construction

Government Center Stream Restoration Before & After

- Restoration of 1,000 LF of an unnamed tributary of Difficult Run for improvements to water quality and ecological function of the stream corridor.

Drainage Area (acres)	Phosphorous Removal (lbs/yr)	Nitrogen Removal (lbs/yr)	Sediment Removal (tons/yr)
150	10.7	202	1.6

Before and After Example

Big Rocky Run II

Before

After

Before and After Example

Rabbit Branch Stream Restoration

Before

After

Construction Timeline

- Construction start - Summer 2023
- Construction duration – Approximately 12 months
- Daily construction inspection
- Weekly construction progress meetings (County, Contractor, Consultant)
- Community Construction progress meetings as needed/requested
- Warranty Inspections
- Monitoring after significant storm events
- Nationwide Permit 27 Monitoring
- Vegetation Monitoring

Contact Information

Justin Pistore – Project Manager

703-324-5685

justin.pistore@fairfaxcounty.gov

Fairfax County Stormwater Planning Division

703-324-5500 TTY 711

12000 Government Center Parkway

Suite 449

Fairfax, Virginia 22035

www.fairfaxcounty.gov/dpwes/stormwater

To request this information in an alternate format call 703-324-5500, TTY 711