Stream Restoration Using Natural Stream Design in Harrisonburg

Ed Watson
Hydrologist

Canaan Valley Institute
WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Blacks Run Project Area

Ag land until 1950s-60s

Donated to City for a Park (“Purcell Park”)

Aging / failing infrastructure—CSOs

TMDL for sediment and fecal coliform

Asphalt / rooftops—highly impervious, flashy

Friends of Blacks Run Greenway—FBRG

Well-intentioned, misguided “maintenance”

“Unique” opportunity, or misallocation of resources?

Blacks Run Project Area

Objectives

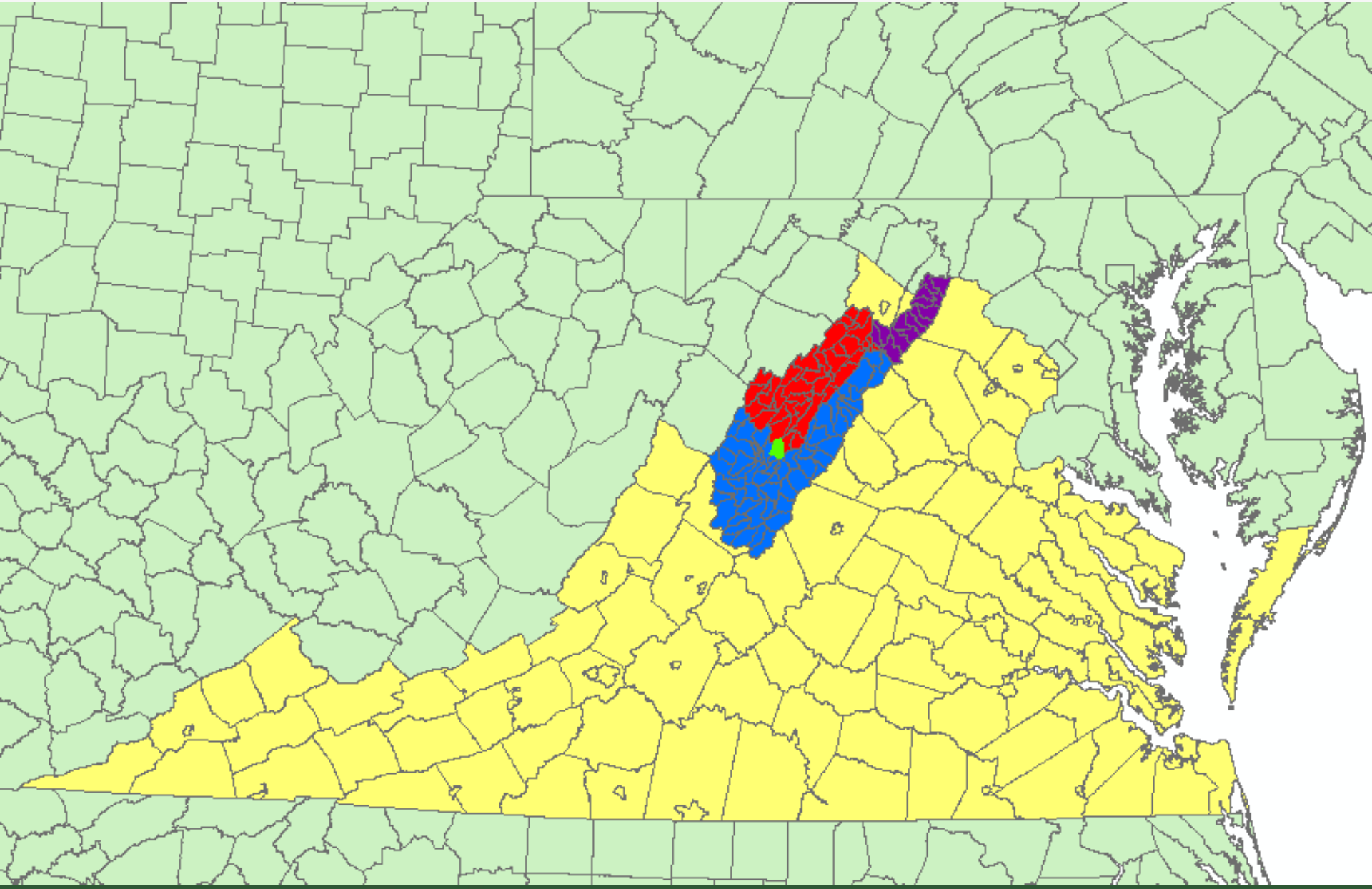
- **Reduced maintenance**
- **Improved aquatic habitat**
- **Reduced sediment inputs**
- **Improved riparian habitat**
- ***Improved aesthetics(?)**

Partners

CVI
FBRG
City of Harrisonburg Parks and Recreation
Conservation Services
Atkins Excavating
VA TNC
Virginia Aquatic Resources Trust Fund
Valley Conservation Council

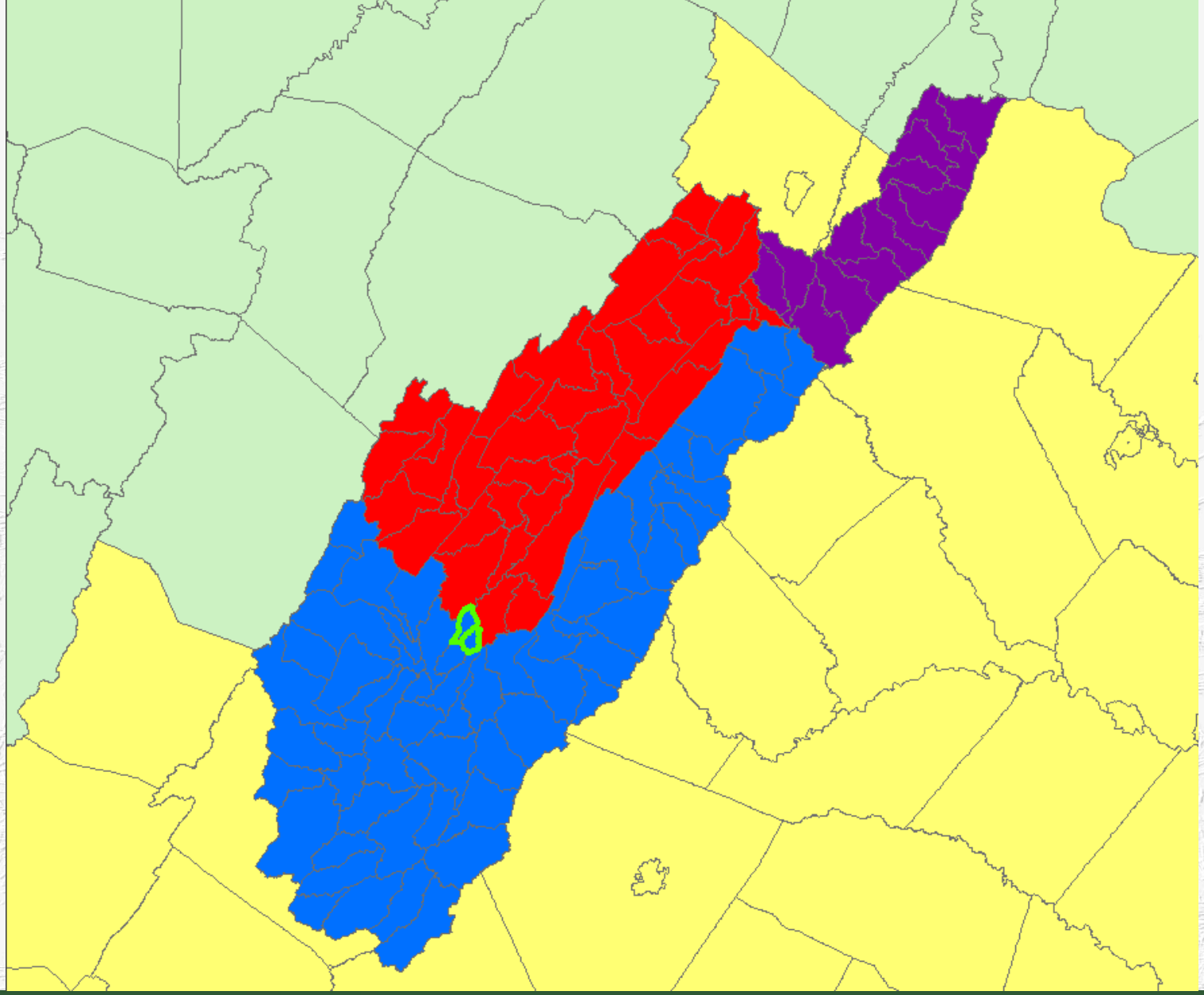
Restoration Project by the Numbers

17 acres in easement
4400 feet of stream
3500 trees planted
>2000 live stakes
47 in-stream structures
$337,500 total construction cost



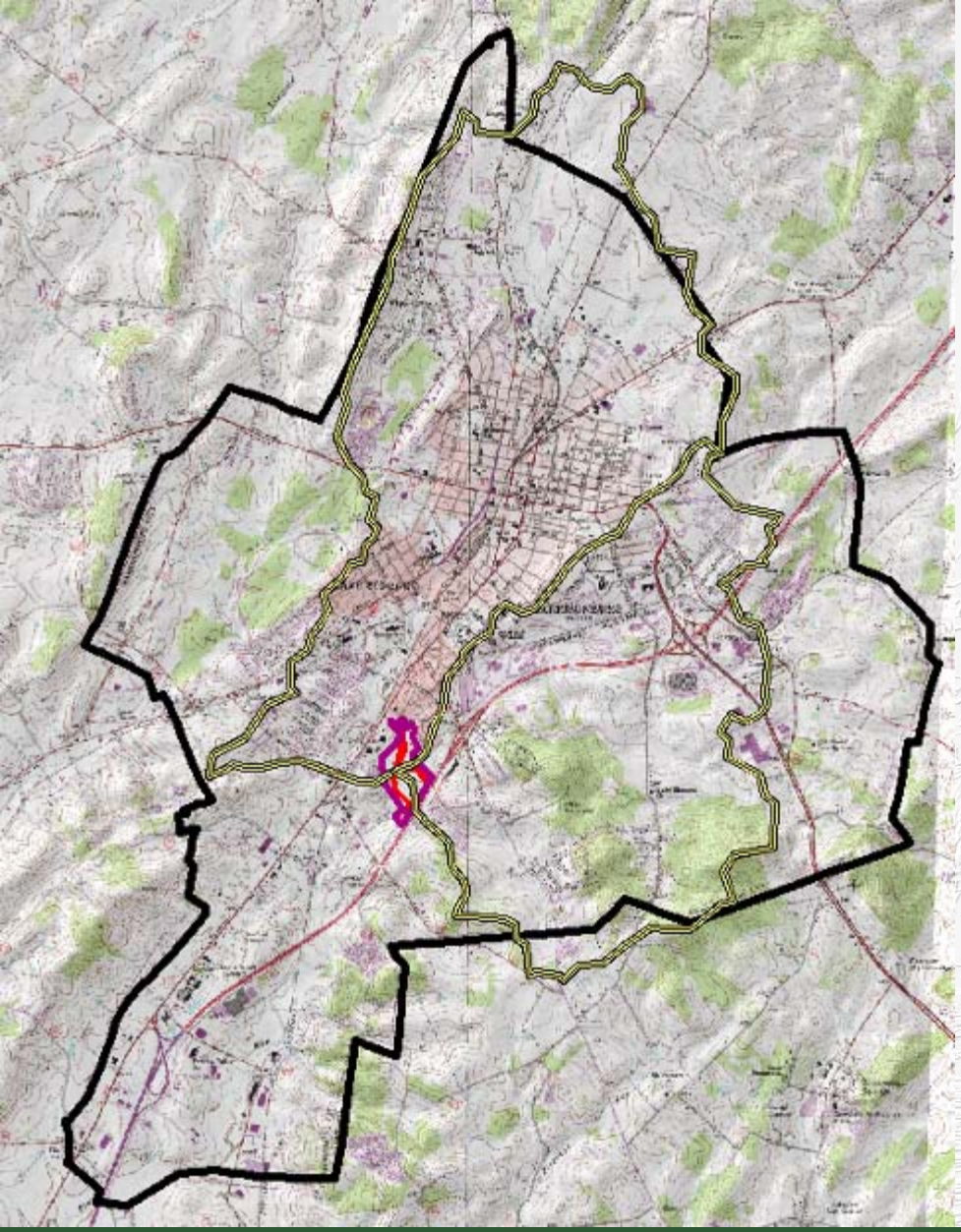
Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995



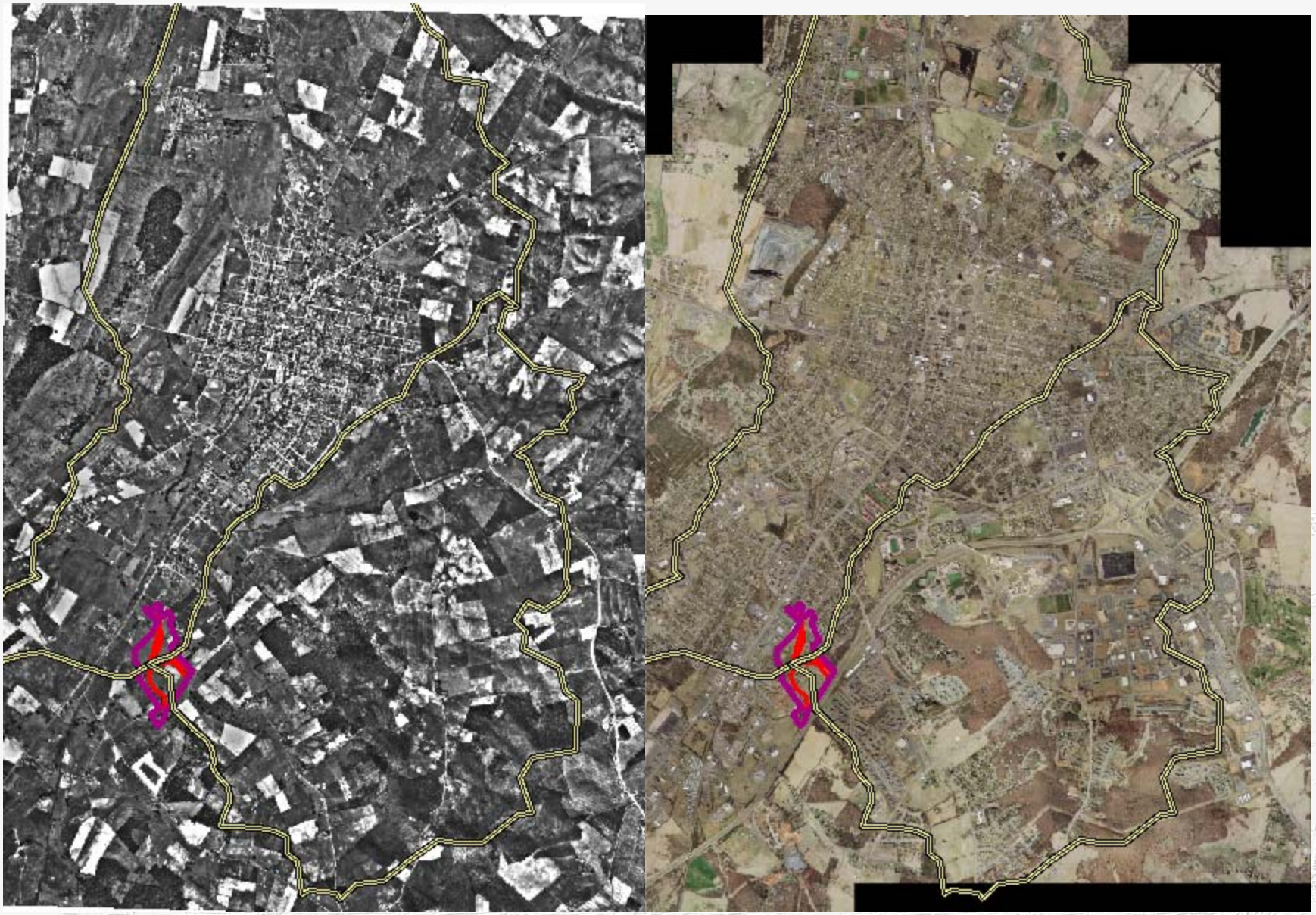
Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995



Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

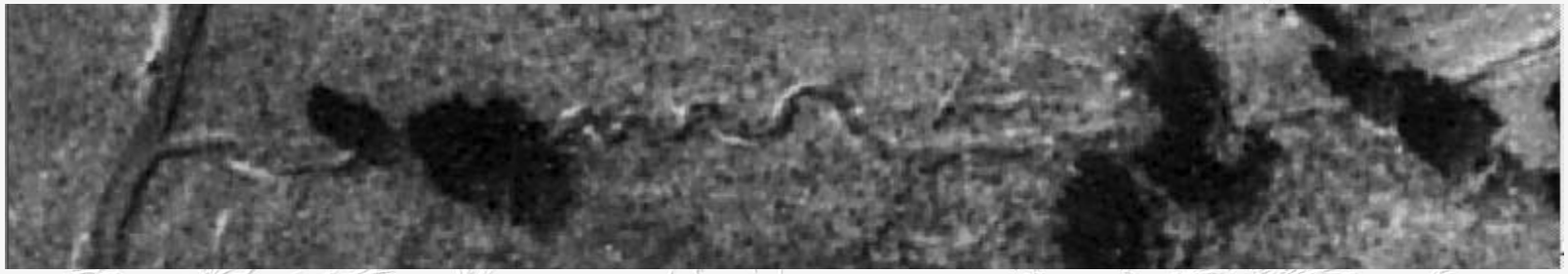


Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995



Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

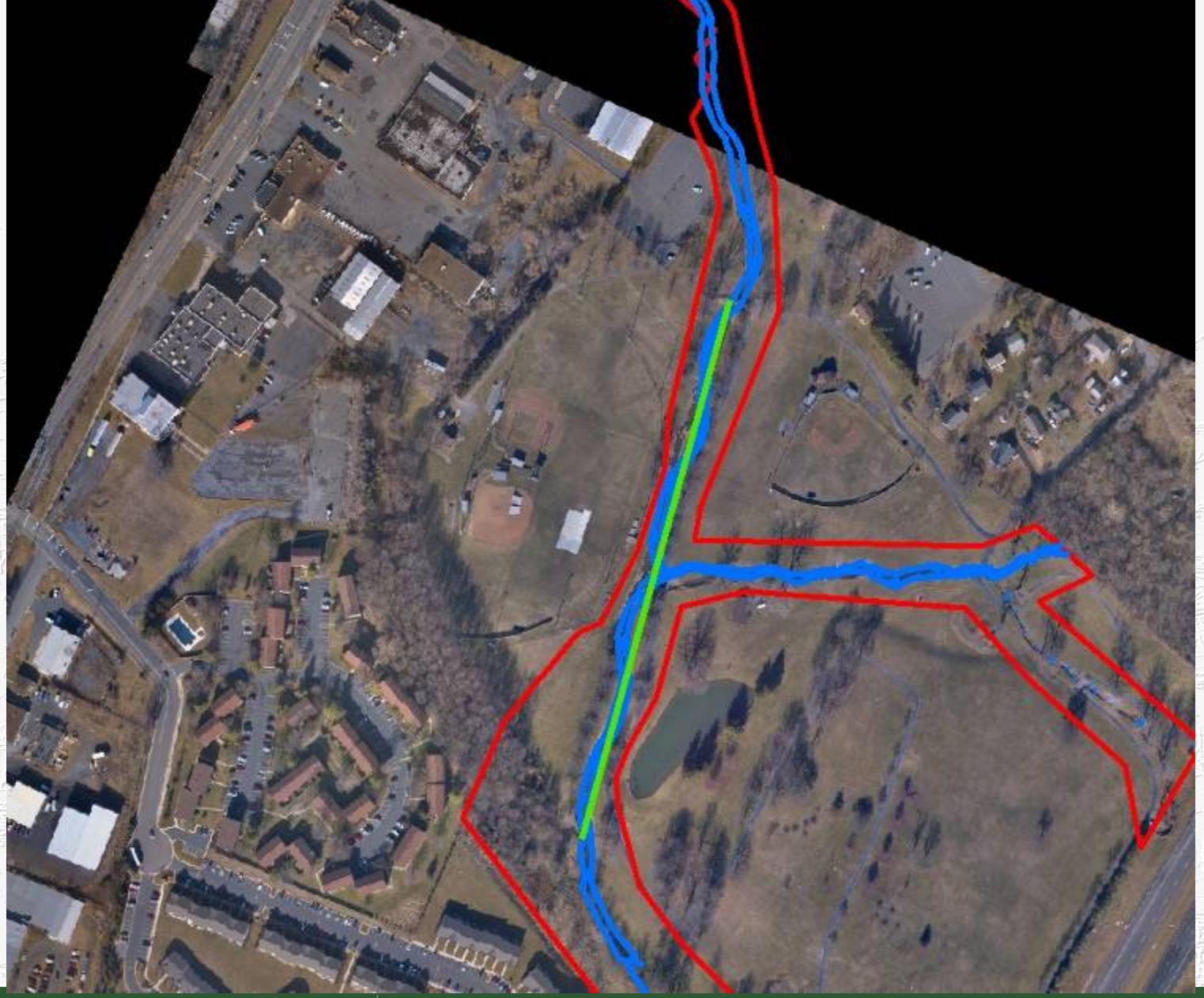
WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995



Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

Monitoring

1,2,3,5,7,10 year
7 cross sections
Longitudinal profiles
BEHI assessments
Pebble counts
Hundreds of photographs
Vegetation Plots
Stream gage