

A scenic view of a river flowing through a forested area. The water is dark and calm, reflecting the surrounding greenery. Large, light-colored rocks are scattered throughout the river, some partially submerged. The background is a dense forest of tall trees with lush green foliage.

Instream Flow Studies in the Shenandoah River Basin

Northern Shenandoah Valley
Regional Commission

Central Shenandoah Planning
District Commission

In Cooperation with the US Geological Survey

Instream Flow Studies in the Shenandoah River Basin

Field Update:

- 1) SF Habitat
- 2) NF Comparison

Instream Flows:

- 1) Summer 2006
- 2) Summer 1999
- 3) Instream Habitat

Timeline:

- 1) SF 2007 Objectives
- 2) Related Studies



Physical Habitat:

Bentonville to Gooney Creek,
Warren County, VA

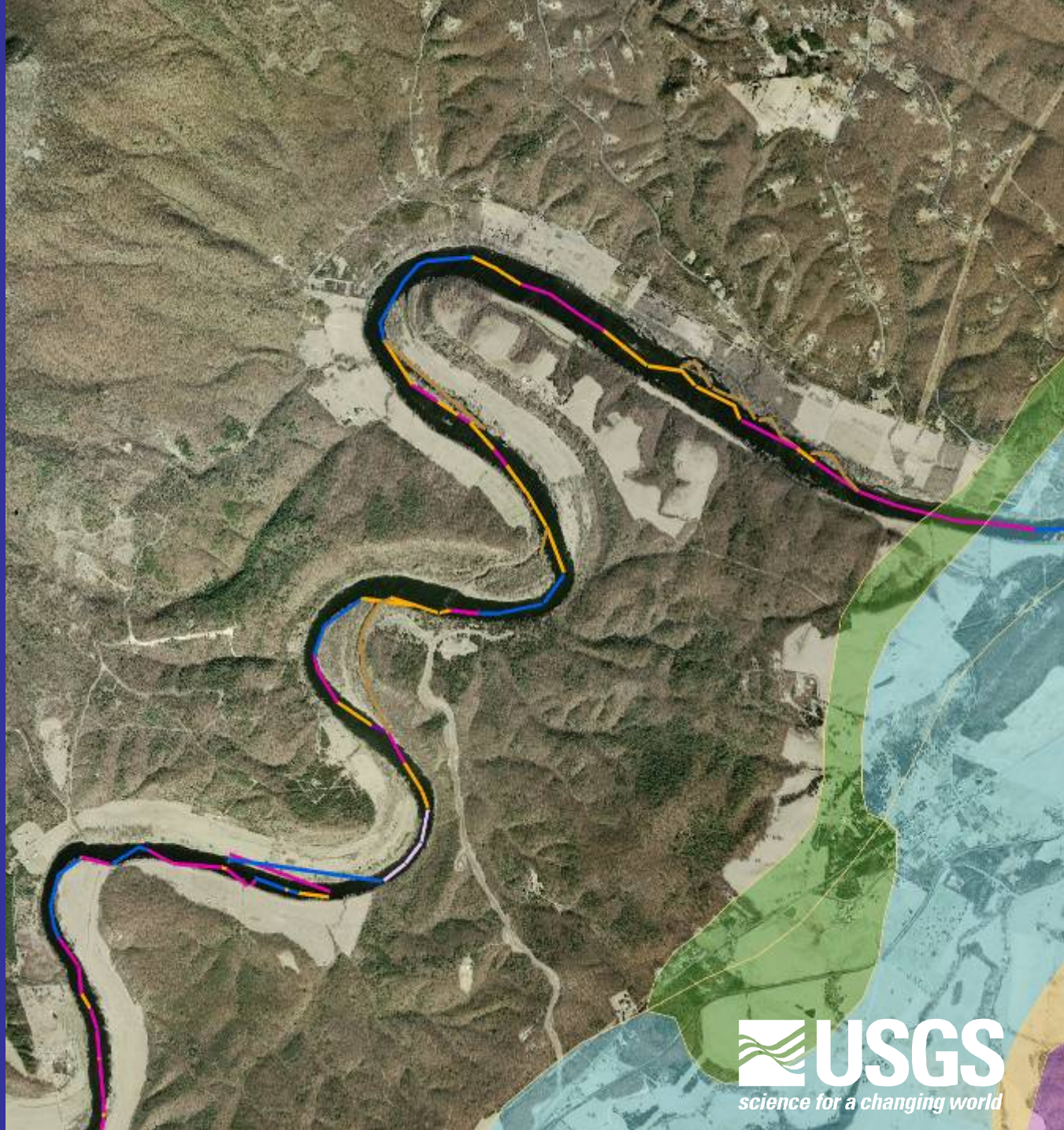
Explanation

Habitat Type

- Backwater
- Pocket Run
- Pool
- Bedrock Riffle
- Particle Riffle
- Bedrock Run
- Particle Run

Geology

- Beekmantown
- Conococheague
- Edinburg, Lincolshire, and New Market
- Martinsburg and Orondo



Habitat Comparison

North Fork:

- 1) Average Length of Habitat Unit Pools = 429 – 1144 ft
- 2) Average Depths = 5 – 8 ft
- 3) Maximum Depths = 15 ft

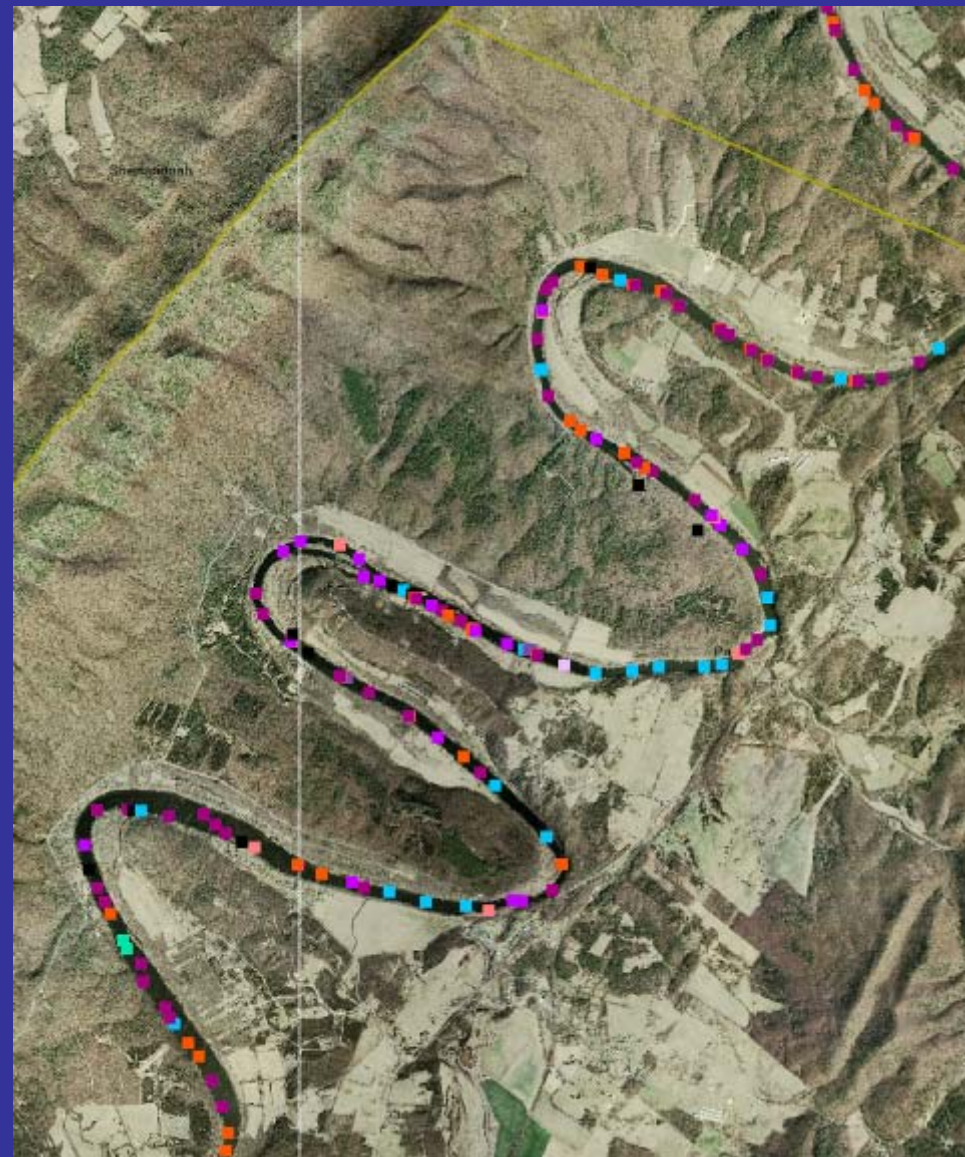
* See pg 14 - 18 for all summary statistics

South Fork:

- 1) Average Length of Habitat Unit Pools = 2640 – 3696 ft
- 2) Average Depths = 6 – 9 ft
- 3) Maximum Depths = 35 ft (15 - 20 ft)

* Data is preliminary

Compton Rapids Natural Pool

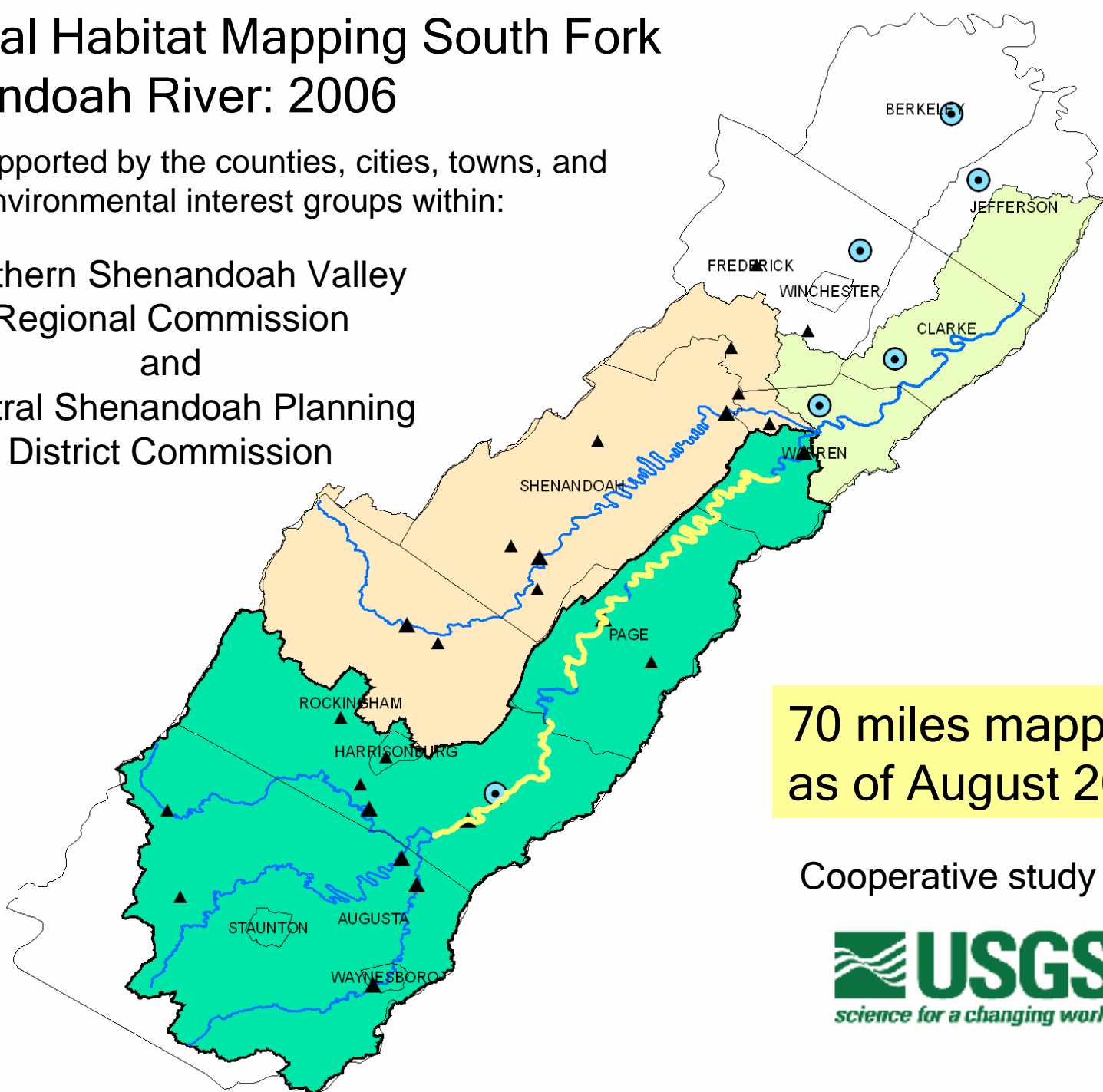


0.6 Mile natural pool, 79-99 yards wide,
6-9 ft deep (avg) 13.4 ft (max)

Physical Habitat Mapping South Fork Shenandoah River: 2006

Study supported by the counties, cities, towns, and
environmental interest groups within:

Northern Shenandoah Valley
Regional Commission
and
Central Shenandoah Planning
District Commission



70 miles mapped
as of August 2006

Cooperative study with:

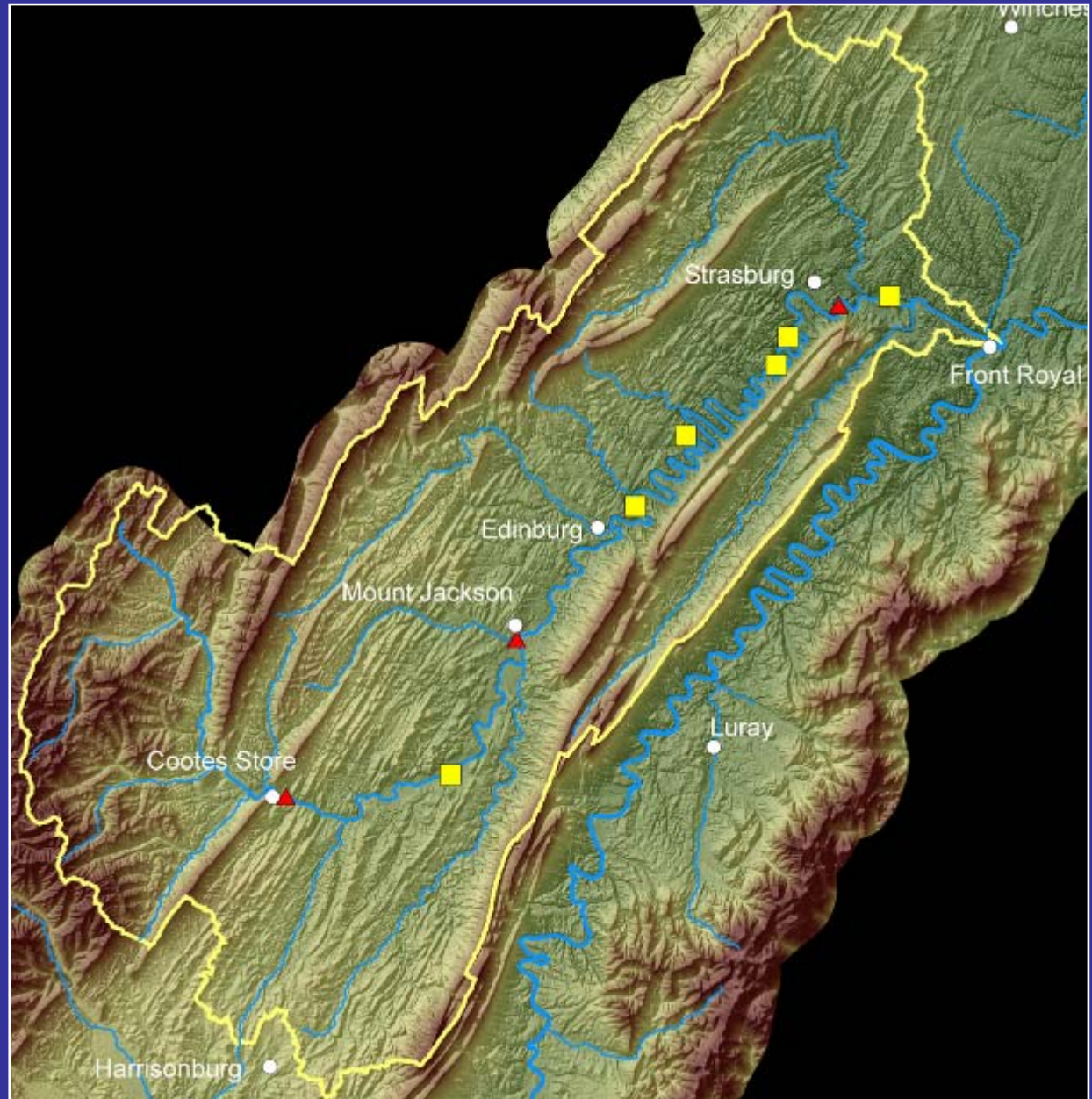


Instream Flows 2006, 1999, and Instream Habitat

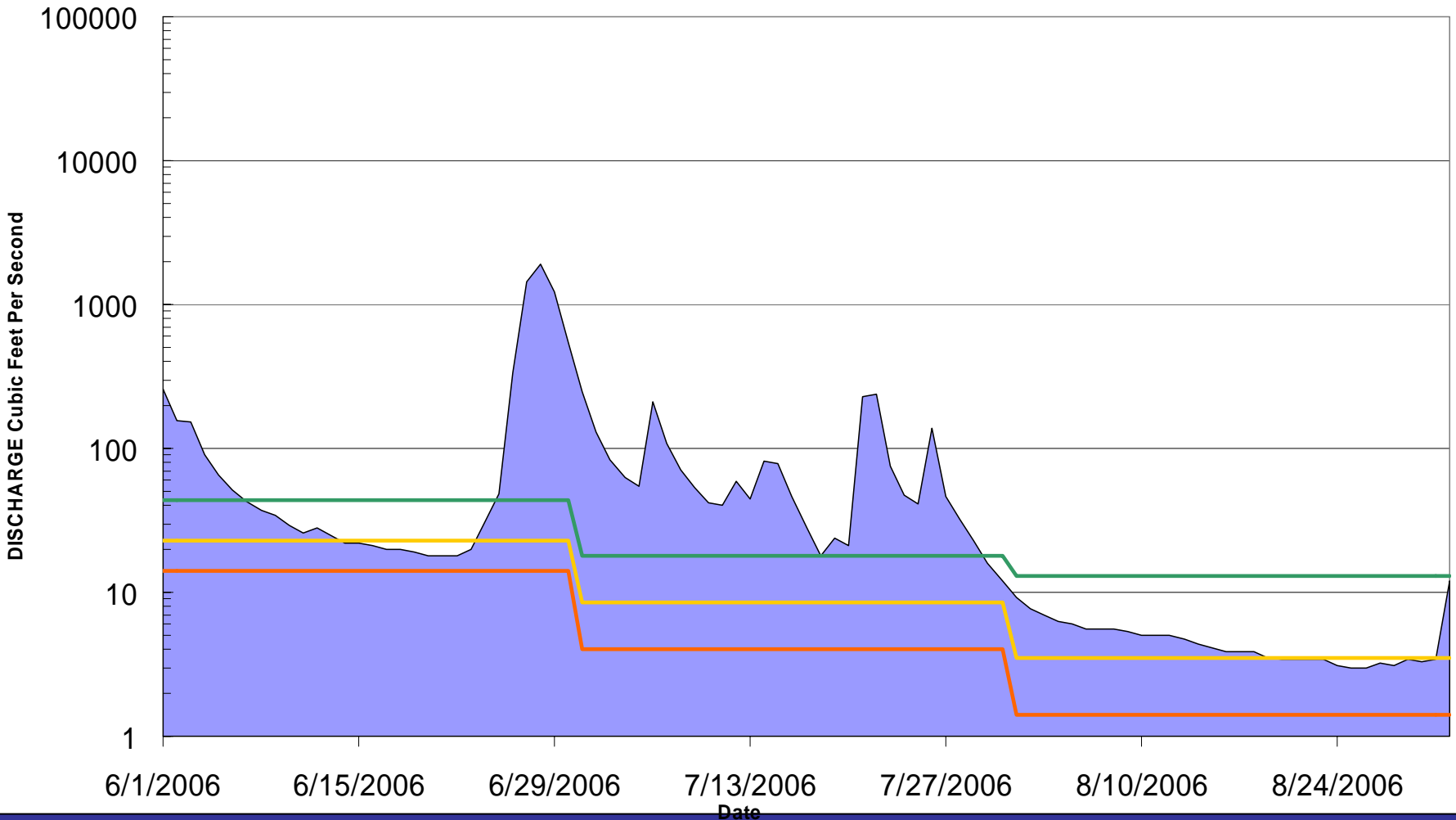
- Hydrograph
- Statistics
- Habitat



North Fork Shenandoah River Study Sites and Stream Gages

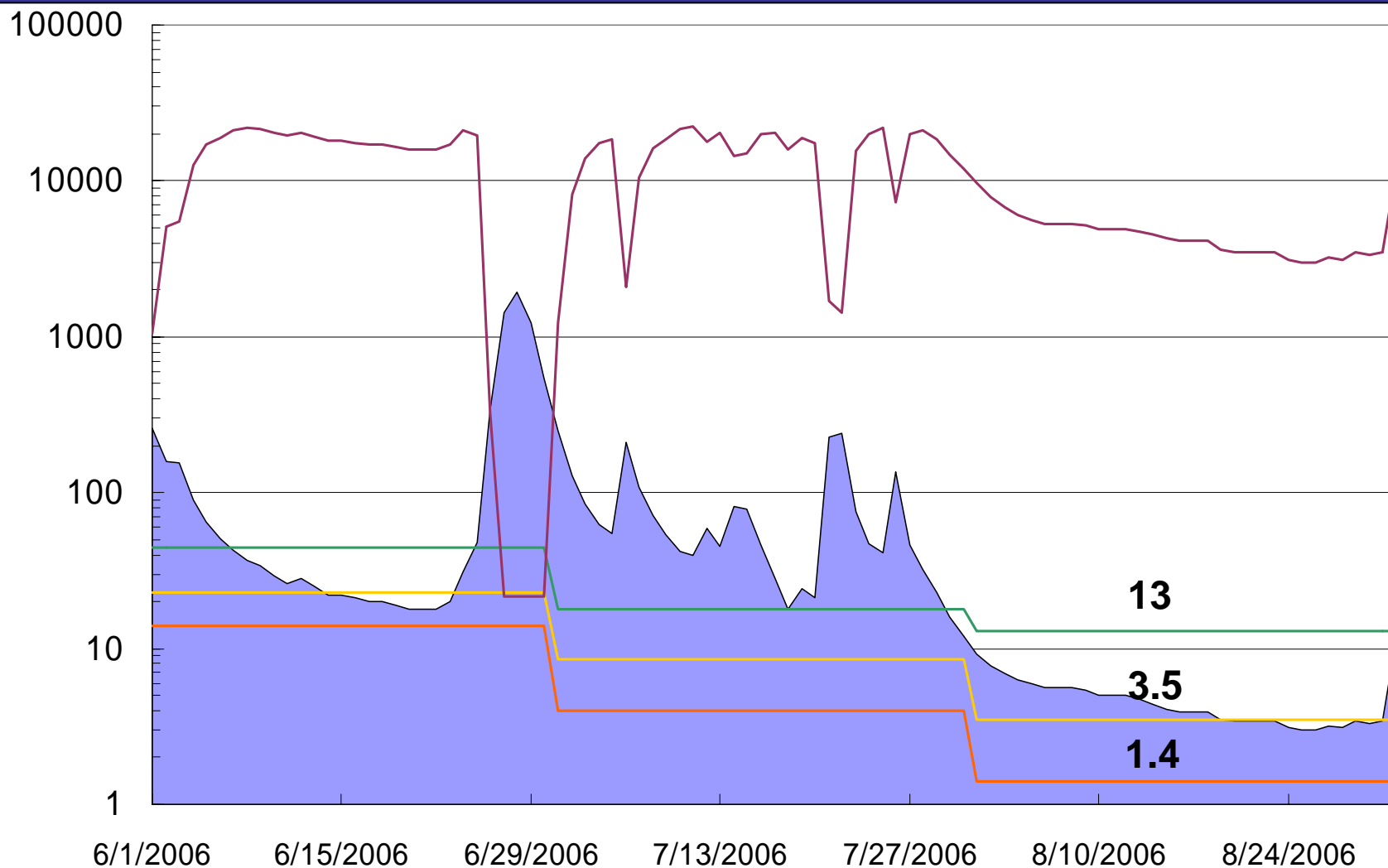


Cootes Store Streamflow June, July, August 2006 With Monthly Flow Statistics



■ NF Shenandoah Cootes Store ■ 50-percent flow ■ 75-percent flow ■ 90-percent flow

Cootes Store Streamflow June, July, August 2006 With Monthly Flow Statistics



■ NF Shenandoah Cootes Store
 — 50-percent flow
 — 75-percent flow
 — 90-percent flow
 — NF_Cootes Store Habitat



Fast-Generalist Guild 1999 Time Series

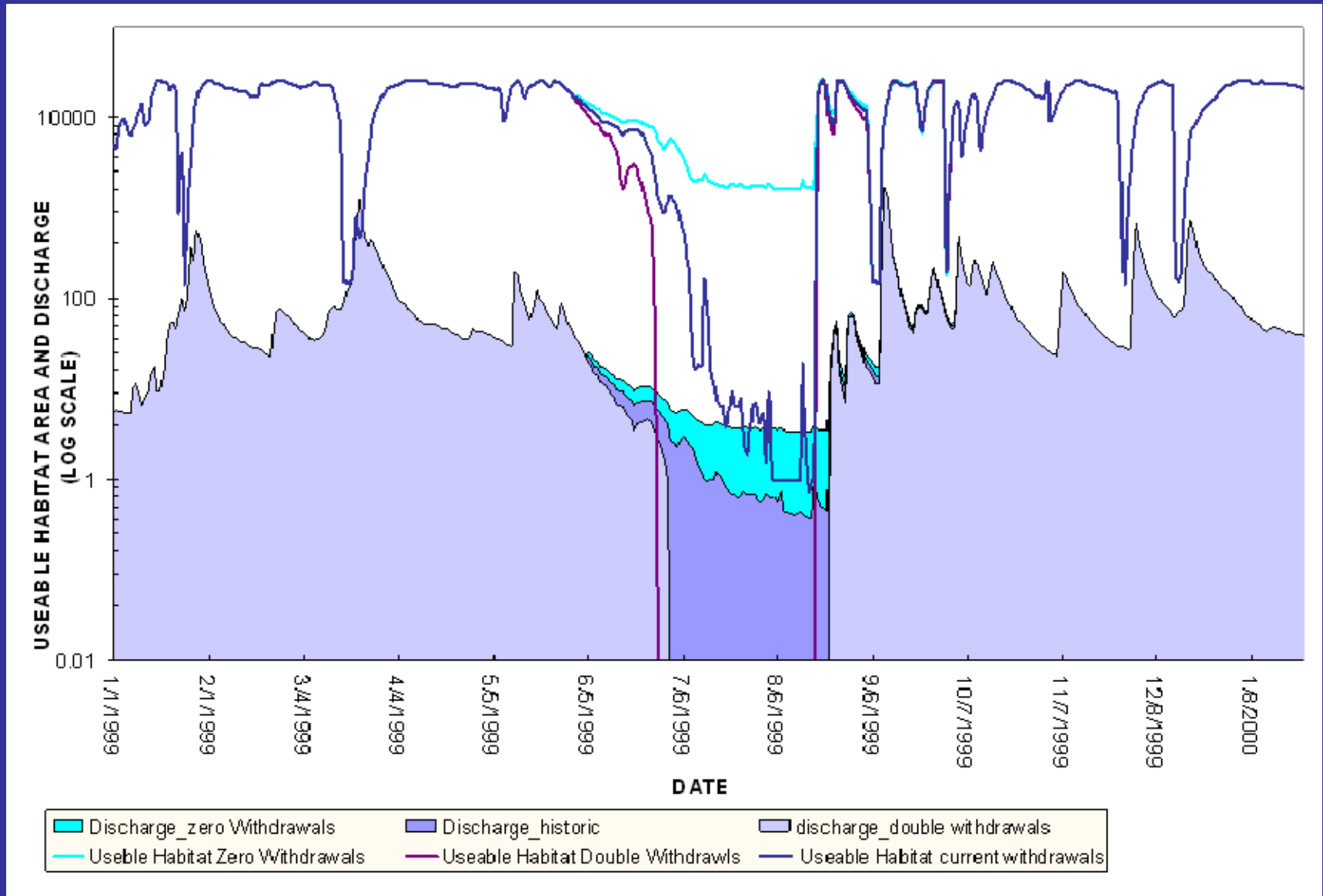


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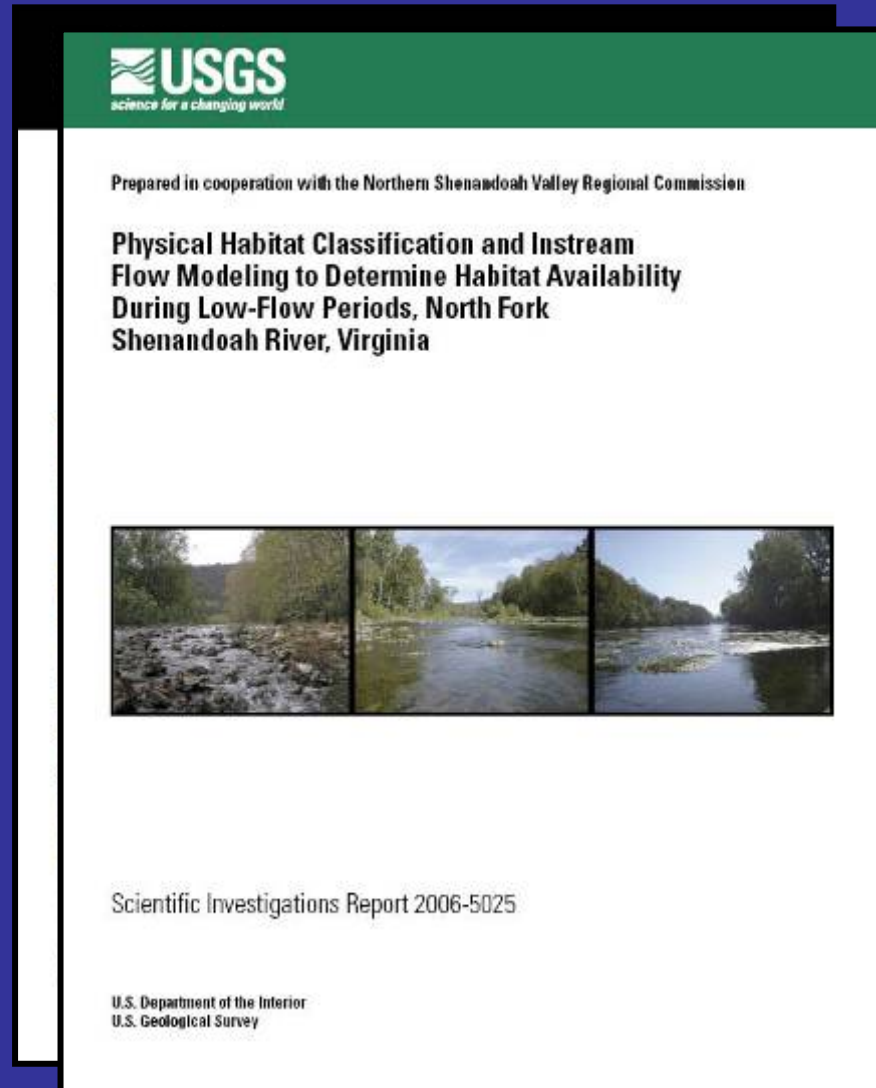
North Fork Shenandoah River Instream Flow Study Results

Results:

- 1) Aquatic Habitat
- 2) Water Quality

Next Step:

- 1) South Fork Shenandoah
- 2) Expand Research in the North Fork
(John Lane, John Young)



South Fork Research Timeline

Timeline:

July 2005 – Oct. 2006

✓ Physical-Habitat Mapping

November 2006 – Sept. 2007

- 1) Water-Quality Survey
- 2) Study Reach Selection
- 3) Hydraulic-Data Collection
- 4) Habitat/QW Publication

October 2008 – Sept. 2009

- 1) Hydraulic-Data Collection
- 2) Habitat/QW Publication

September 2009 – Oct. 2010

- 1) Modeling, Analysis, Publication



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Questions ?

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