



U.S. Fish & Wildlife Service

CHESAPEAKE BAY FIELD OFFICE

COASTAL PROGRAM

Watts Branch Stream Restoration – Challenges With Urban Restoration

Mark A. Secrist

U.S. Fish and Wildlife Service

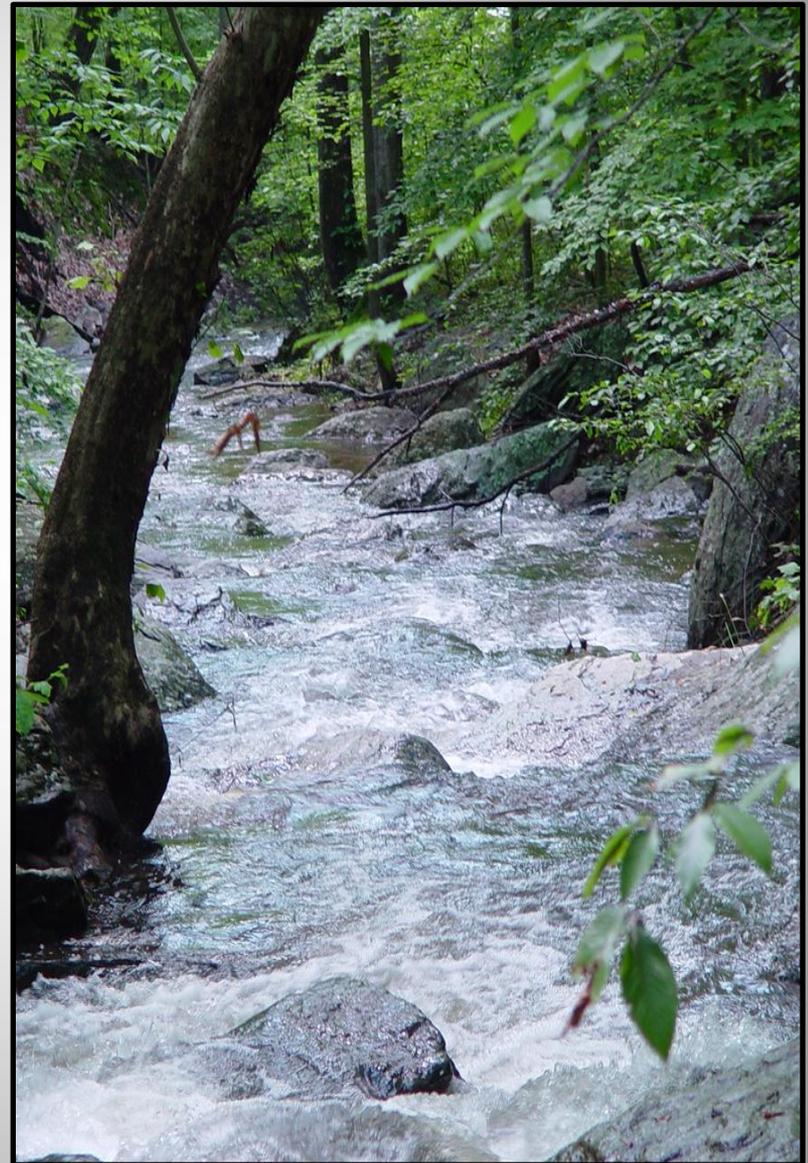
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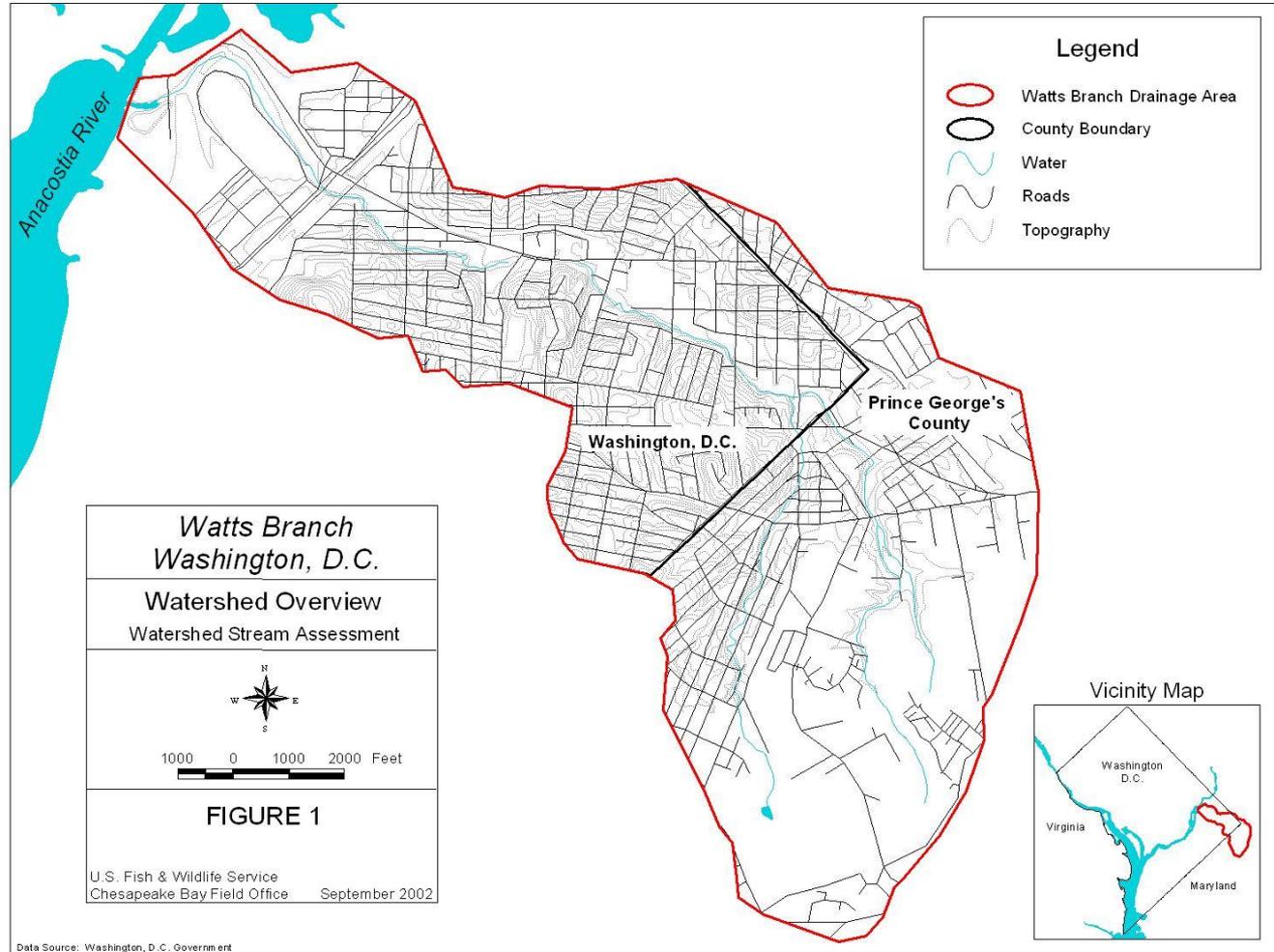




Watt's Branch Stream Restoration

Project Background

- Located in NE Washington D.C.
- 1.8 miles of stream and riparian restoration
- 3.3 square mile drainage area
- Poor in-stream habitat
- 1,500 tons of bank and bed erosion annually





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Project Design:

- Watershed based assessment and design
- A natural channel design methodology
- Convert from F5 to B5c
- Improve bedform diversity thru in-stream structures
- Floodplain connection and creation
- Reduce lateral erosion with bioengineering
- Increase riparian buffer width with native grasses, trees, and shrubs
- Invasive species removal





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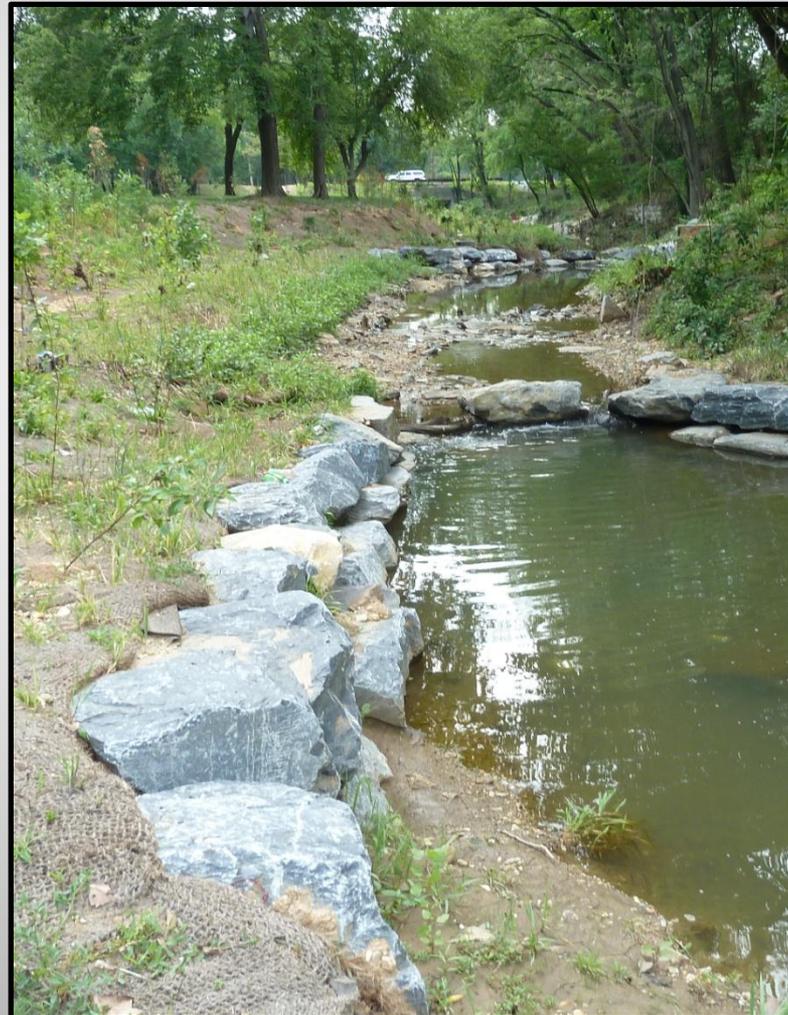
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Project Partners:

- U.S. Fish and Wildlife Service (Service)
- D.C. Department of the Environment (DDOE)
- Natural Resources Conservation Service (NRCS)
- National Park Service
- Environmental Protection Agency
- National Fish and Wildlife Foundation
- Washington Water and Sewer Authority (WASA)



Project Status:

- Construction completed in October 2011
- Riparian plantings to be installed Fall/Winter 2011
- Monitoring will begin Fall 2011



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Project Positives:

- Great working relationship with partners, design team (Michael Baker Engineering), and installation contractor (EQR)
- One property owner - National Park Service, with DDOE over site
- Positive feedback from community





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Project Challenges:

- Highly urbanized watershed
- Economically depressed area
- Security Concerns
- Altered hydrograph
- Large amounts infrastructure
- No SWM
- FEMA floodway regulations



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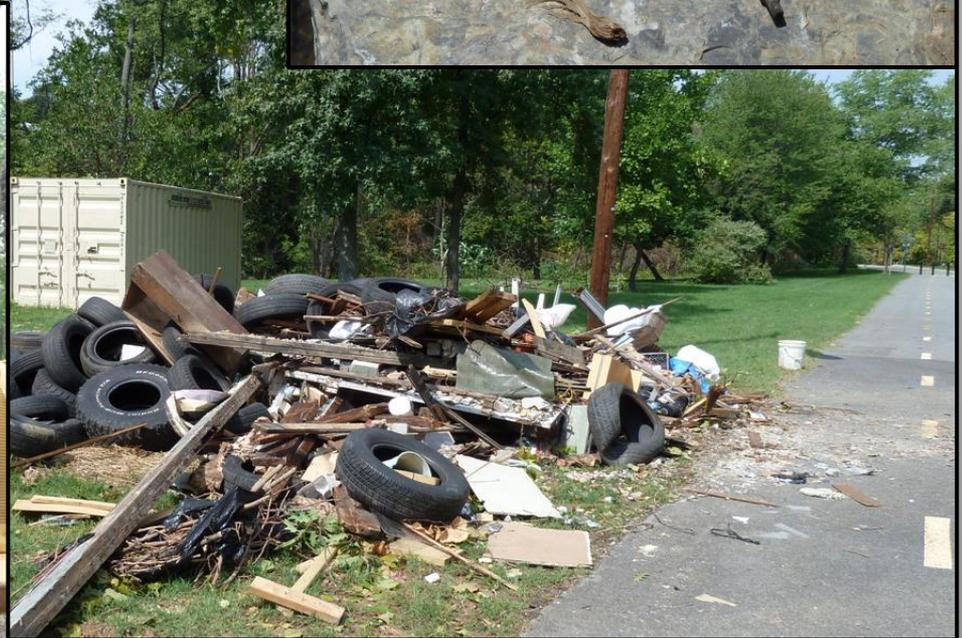
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Security Concerns:

- Lack of willing contractors
- Equipment damage
- Danger to workers
- Increases cost





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Altered Hydrograph:





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Infrastructure:

- Limits work area
- Impacts restoration options
- Can increase design and implementation costs





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Sanitary Sewer Crossings:

- System 80-100 years old along project
- Unknown construction of pipes
- Exposed along stream channel
- Unknown condition of pipe encasements
- Large amount of replacement, relocation, and upgrading in the watershed





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Project Area 11 Sanitary Sewer Work:

- Install new encasement on existing pipe
- Unknown construction of pipe
- Unable to test pit prior to construction
- Caused a delay in construction
- Resulted in the installation of a new pipe and encasement





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FEMA Regulations:

- No rise in 100 year flood elevation
- No additional impacts to structures





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100% Design Plan Adjustments:

- Michael Baker Engineering completed the 100% designs and HEC-RAS modeling
- Revise existing FEMA topographical data to best available survey data
- Conditional Letter of Map Revision (CLOMR) for project implementation
- Proposed channel inverts to remain the same as existing conditions
- Add additional floodplain storage
- Caused design and implementation delay
- Resulted in contracting and bidding issues





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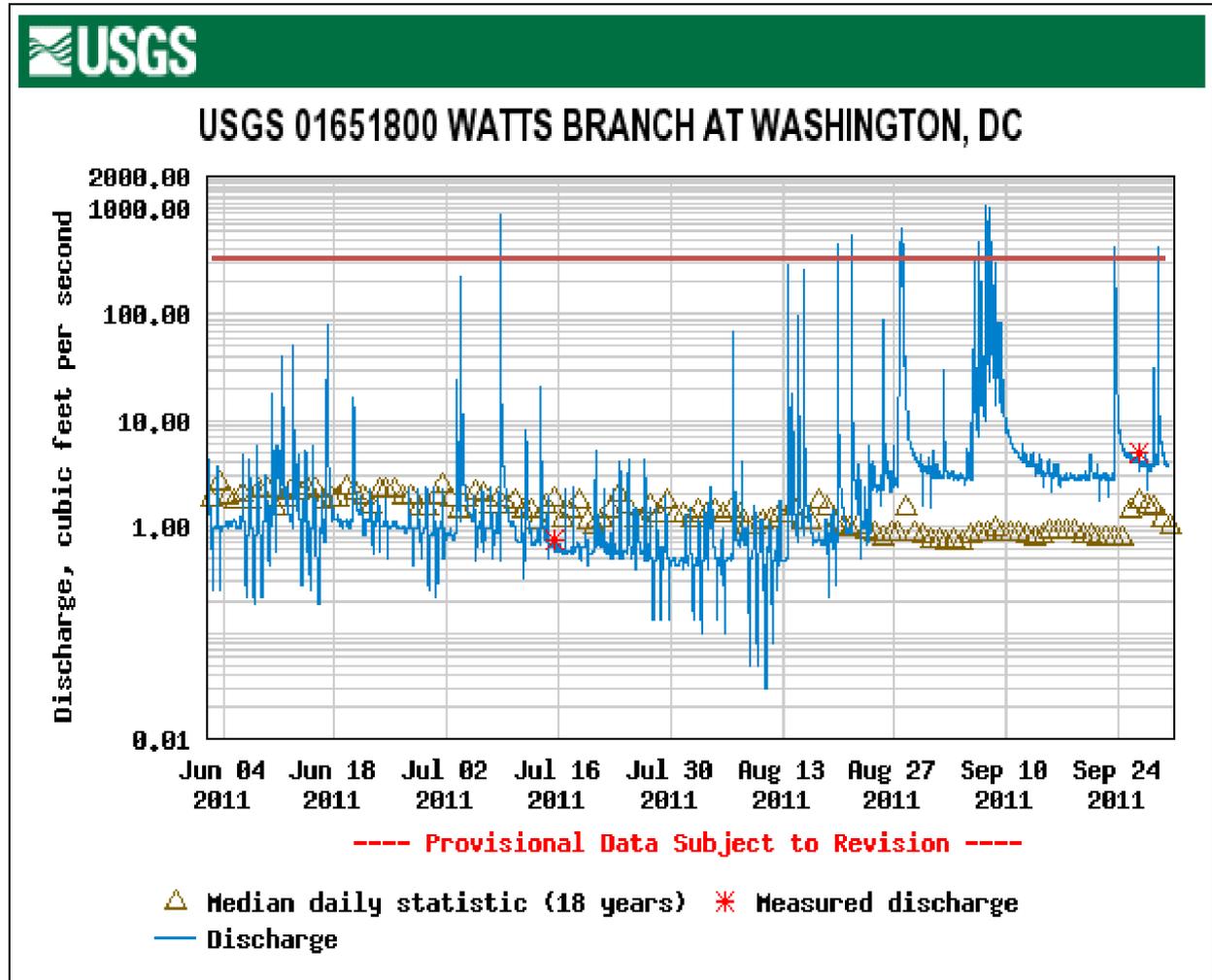




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USGS Gage:

- Used as a tool during the design process
- 320 cfs bankfull discharge at USGS gage
- 10 bankfull events since July 2011
- 3 of those events were approximately 1000 cfs





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Field adjustments:

- Structure locations
- Bankfull bench/floodplain creation
- Sanitary Sewer encasements and pipe replacement
- Stormwater outfall relocation
- Construction access
- Riparian buffer width





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Project Benefits:

- Improved bed form diversity from 90% riffle run to 60% riffle and 40% pool
- Significant reduction of bed and bank erosion
- Increased floodplain storage
- Planted native grasses, shrubs, and trees to provide bank stabilization
- Reestablished riparian corridor
- Improved water quality – sediment reduction, DO, temperature reductions
- Improved habitat for American eel, alewife, and American shad

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Take Home Points:

- Implementation must be overseen by designers
- Structure design may need to be changed slightly based on site conditions
- Good working relationship with partners and regulatory agencies facilitates field changes
- Bankfull benches are our friends
- Urban restoration is possible, but challenging





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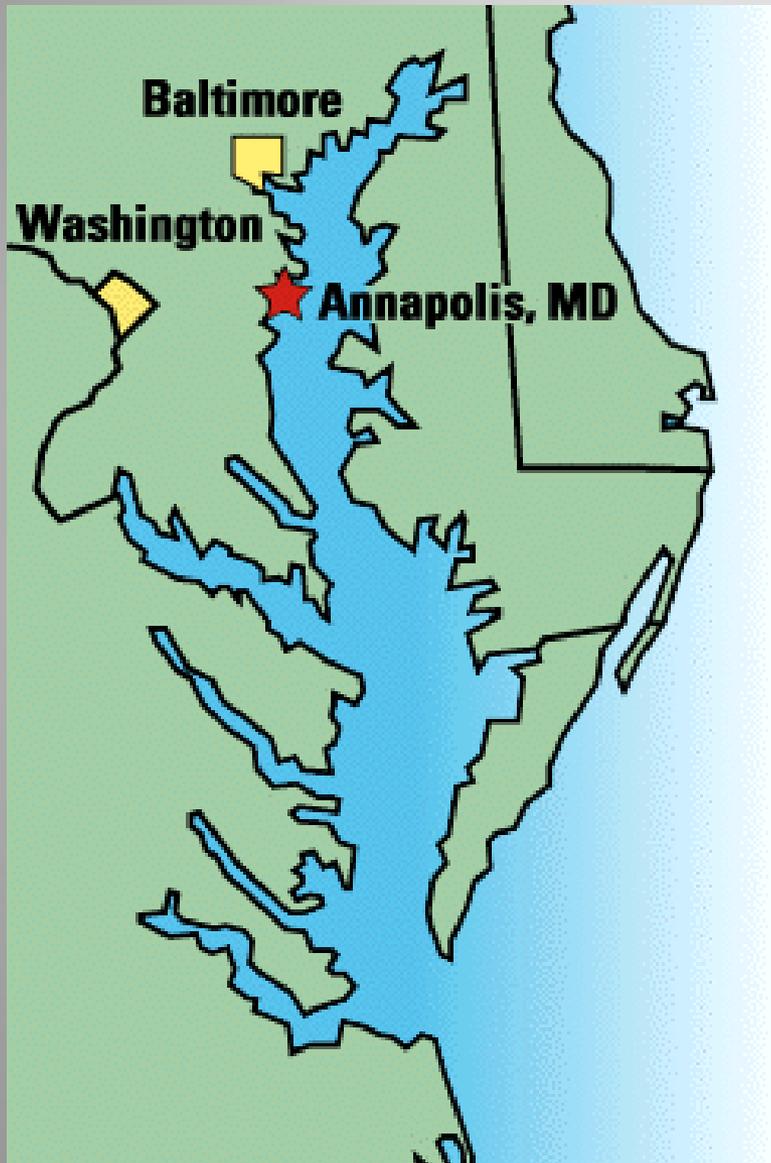




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