Potomac Large River Environmental Flow Needs: Expert workshop introduction and overview

Stephanie Flack, The Nature Conservancy Sept. 22, 2010

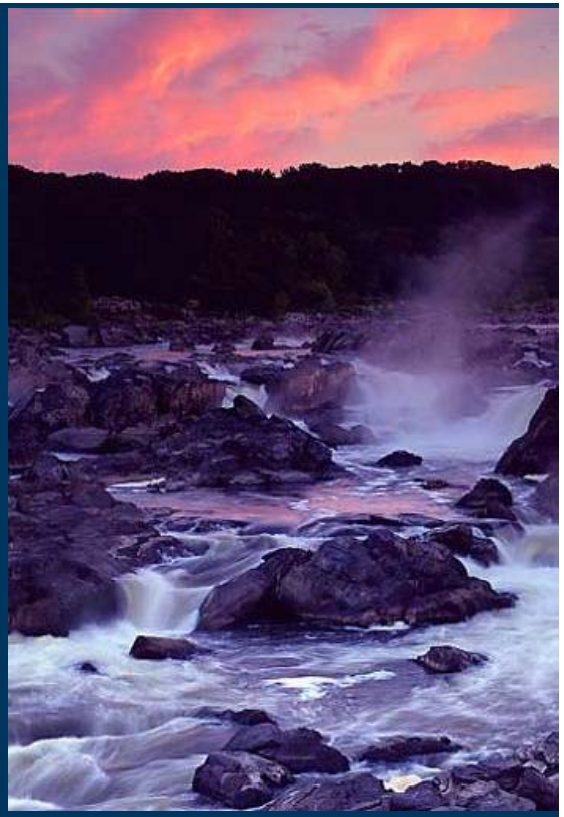
Welcome and overview

- Workshop: focus on determining environmental flow needs of selected Potomac large river segments and tributaries
- Part of larger Middle Potomac Watershed Assessment, a USACE-TNC-ICPRB-NPS led effort
- NPS funded majority of this project component and sponsored workshop venue
- Crystal Light gift supported participants' costs
- 64 participants: all five basin jurisdictions; Federal, state, county, regional agencies; NGOs; academics

Introduction of project research and workshop team

Background report research team:

- Jim Cummins, Claire Buchanan, Carlton Haywood, Heidi Moltz, Adam Griggs (ICPRB);
- Than Hitt and Rita Villella (USGS);
- R. Chris Jones, Richard Kraus (GMU-PEREC)



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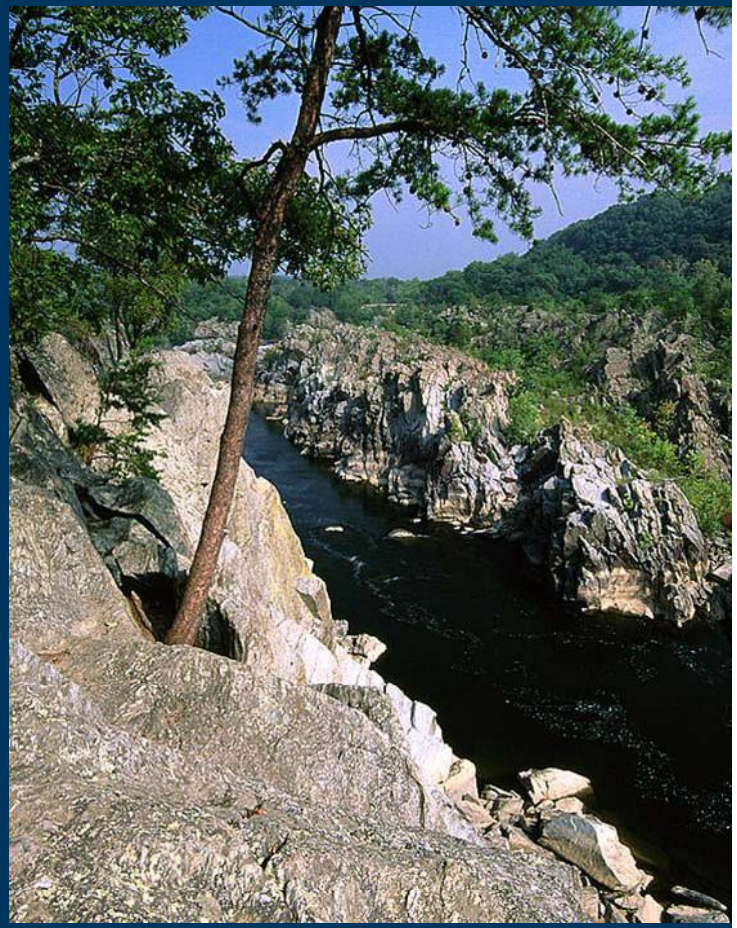
Workshop organizing team:

- Stephanie Flack, Julie Zimmerman, Colin Apse, Tara Moberg, Mark P. Smith, Judy Dunscomb, Donnelle Keech, Mark Bryer (TNC)
- Jim Cummins, Carlton Haywood, Claire Buchanan (ICPRB)
- Than Hitt and Rita Villella (USGS)
- Claire O'Neill and Andrew Roach (USACE)

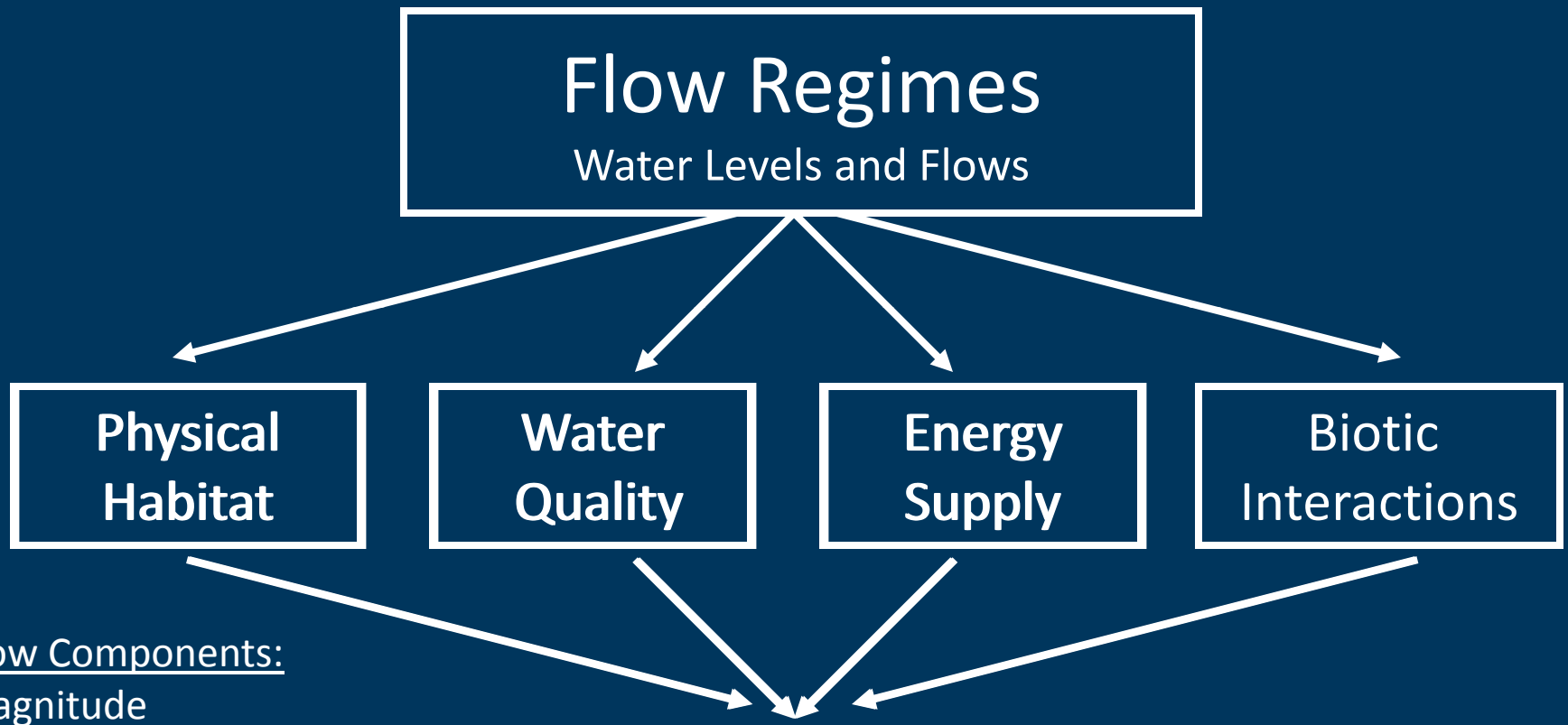
Project purpose

To develop information and tools that enable the Potomac watershed jurisdictions and water managers to protect **environmental flows,**

defined as the seasonally variable flows of water that **sustain healthy river ecosystems** and the **goods and services** that **people** derive from them.



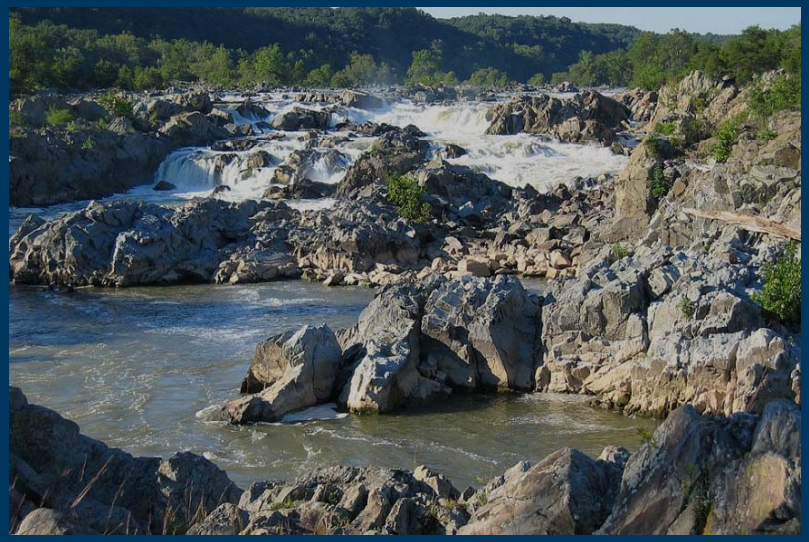
Flow: The master variable



Flow Components:
Magnitude
Duration
Timing
Frequency
Rate of change
Inter-annual variability

From Poff et al. 1997

Why care about environmental flows on the Potomac?



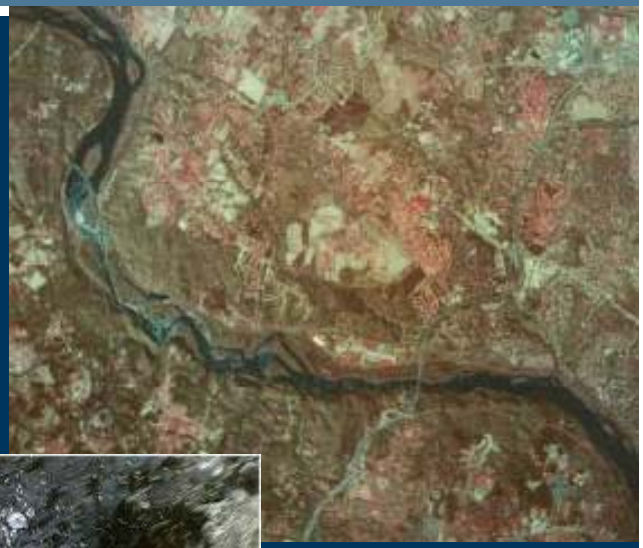
Freshwater: Generally abundant, but highly variable

USGS, Little Falls Gage: Daily discharge statistics for Sep 15 (80 years of record)

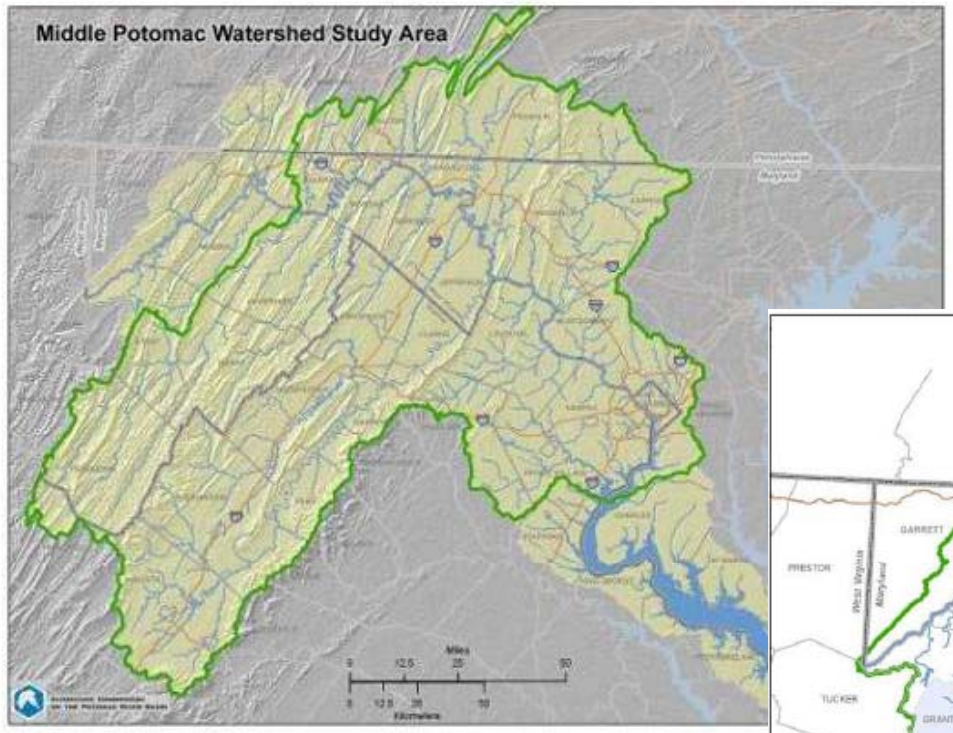
Min (1964)	Most Recent Instantaneous Value Sep 15	20th percen-tile	Median	Mean	80th percen-tile	Max (1996)
434 cfs	686 cfs	1300 cfs	2230 cfs	4250 cfs	4710 cfs	44,300 cfs

What is the concern?

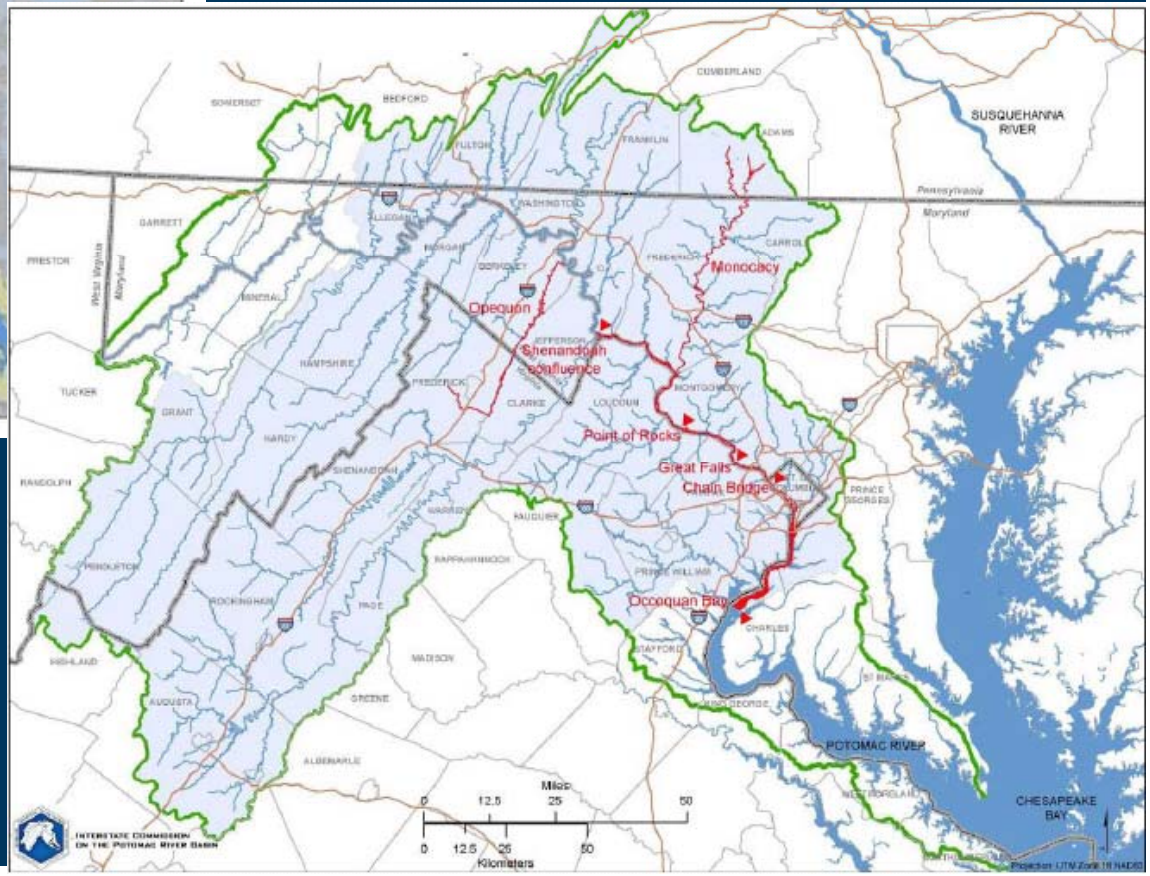
- Population growth – 10% increase per decade from 2000 to 2030
- Water demand – 20-30% increase in Metro DC water use over next 30 years
- Consumptive use for industry and agriculture
- Land use change, stormwater runoff
- Climate change



Large River Environmental Flow Needs project: part of a larger Corps project



2 parts: This effort – define large river flow needs (more qualitative and expert driven due to lack of data)



Larger project: Smaller stream, more quantitative flow alteration-ecological response analysis

Shared issues in water resource planning and management across Potomac basin

- Suite of state water resources laws: MD H.B. 1141, WV Sen. Bill 641, PA Act 220, VA Title 9 Local and Regional Water Supply Planning Regulation
- Need for improved planning and assessment of resources prompted by drought of 1999-2002
- Need to ensure adequate water supplies for increasing human populations
- Need to protect ecological resources
- Need to respond to water use and quality driven by Marcellus gas development

Environmental flows work already underway across Potomac watershed jurisdictions

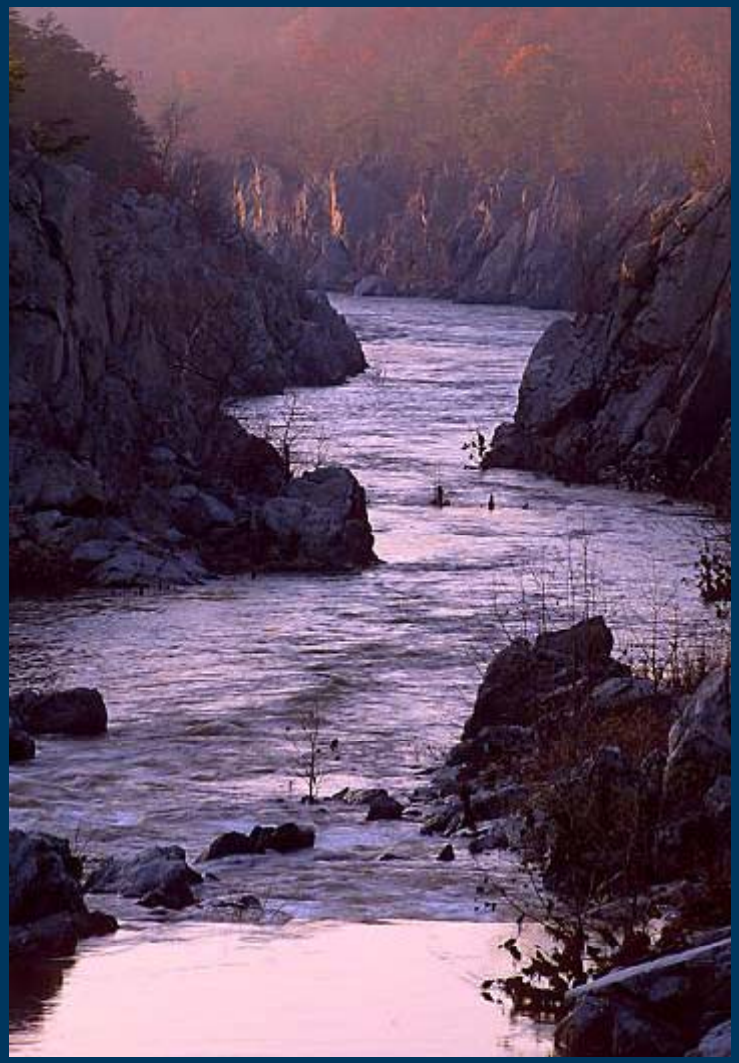
- **VA:** water supply planning regulation requires consideration of cumulative impacts of off-stream and instream beneficial uses. State Advisory committee charged with examining environmental flows. Planned upcoming environmental flows analytical work.

- **PA:** to simulate baseline stream flow conditions for development of environmental flow criteria, + SRBC/Corps/TNC development of seasonal ecosystem-based flow goals for the range of flow conditions relevant to ecosystem protection for habitats in basin subwatersheds

- **MD:** hydro-ecological integrity assessment, part of Hard Rock study

- **WV:** Water Withdrawal Guidance Tool for voluntary best practices (developed in response to Marcellus shale extraction water use)

Benefits of basin-wide large river + smaller stream environmental flows project



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- Provides shared framework for incorporating ecological considerations into water and land use planning
- Helps support state-level water resource planning & management goals
- Offers proactive approach to identifying and managing sources of flow alteration
- Yields consistent basin-wide data and environmental flow recommendations that don't conflict across state lines
- Presents opportunity to move towards a more comprehensive, basin-wide approach to water resource management
- Creates forum to discuss and develop shared goals for sustainable water management, outside a crisis situation

Specific workshop tasks

- Review and refine flow hypotheses and draft flow recommendations
- Review and refine proposed environmental flow statistics that reflect flow needs
- Determine adequacy of current conditions to meet ecological needs
- Identify approaches to defining protective hydrologic ranges to support ecological functions
- Identify and prioritize longer-term research and monitoring needs
- Discuss potential applications and approaches to protecting natural flows in the Potomac mainstem and selected large tributaries

Thank you for your time and expertise