Large Rivers and the OW Non-wadeable Streams Assessment

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U.S. Environmental Protection Agency

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Disclaimer: This work has been subjected to Agency review and approved for publication but is not meant to reflect Agency policy.
Implementing Statistically Valid Surveys of Our Nation’s Waters

- Determine regional and national water quality conditions
- Promote collaboration across jurisdictional boundaries
- Build state and tribal capacity for monitoring and analysis
- Achieve a robust, statistically valid data set for better management of water resources
- Develop baseline information to evaluate progress
Wadeable Streams Assessment
2004-2005

National Biological Quality

- Good: 41.9%
- Fair: 28.2%
- Poor: 24.9%
- Not Assessed: 5.0%

WSA Mega Regions:
- West: 152,425 stream miles
- Plains and Lowlands: 242,264 stream miles
- Eastern Highlands: 276,362 stream miles
# National Water Resource Survey Schedule

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**National Water Resource Survey**

**Research & Development**

*Building a scientific foundation for sound environmental decisions*
Key Questions Being Asked by this Survey

- What percent of the Nation’s non-wadeable rivers and streams are in good, fair, and poor condition for key indicators of ecological health and human influence?

- What is the relative importance of key stressors such as nutrients and pathogens?
Planning the Non-Wadeable Survey

- Engaging states, tribes and other parties in designing the national survey
- Initial planning meeting, January 2007, San Antonio, TX

- Discussion topics included
  - Sampling design
  - Indicators
  - Reference condition
  - Analysis
  - How to best enhance states’ and tribes’ ability to manage water quality
Key Outcomes

- Suggestion that EPA conduct a single survey of all flowing waters over a two year period (2008-2009)

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Options for Reporting Results

Na High Level Basins

- PANW – Pacific Northwest MRB 7
- CALI – California MRB 8
- COGB – Rio Grande, Colorado, and Great Basin MRB 6
- MORI – Missouri MRB 4
- GLMR – Great Lakes, Ohio, Upper Mississippi, and Souris-Red-Rainy MRB 3
- NEMA – New England and Mid-Atlantic MRB 1

- LMTG – Lower Mississippi, Arkansas-White-Red, and Texas-Gulf MRB 5
- SAGT – South Atlantic-Gulf and Tennessee MRB 2
Options for Reporting Results

- Special subpopulations under consideration
  - Outstanding Natural Resource Waters (ONRW)
  - Flowing waters by land-use categories
    - Agriculture
    - Forest
    - Urban
    - Other
Target Population

All NHD+ perennial steams/rivers that are determined to have flowing water during the study index period (n=1800 sites)
- Excludes tidal rivers up to head of salt
- Includes Great Rivers
- Includes pilot studies in Alaska, Hawaii, and National Trust lands

Conduct study over two years
- Complete initial site evaluation during first year

Sample non-wadeable systems in first year and wadeable systems in second year to minimize climate effects within each class
Additional Design Requirements Being Discussed

- How to balance sample size equally across Strahler order to permit estimates by category
  - 1<sup>st</sup> – 4<sup>th</sup> order (~900 sites)
    - Balance 1<sup>st</sup>-2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup>
  - 5<sup>th</sup>+ order (~900 sites)
    - Balance 5<sup>th</sup>-6<sup>th</sup>, 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup>+

- 450 WSA sites from 2004 will be revisited to increase the power to detect trends faster

- Include sufficient sites per state to permit state-level assessment
  - States would be required to fund additional sites
  - Consider using sites from compatible state-wide probability design programs where they exist
Indicator Selection

- Interest in many indicators

- “A critical element towards building state and tribal capacities to conduct future surveys of these and other resources is the development and use of regionally applicable field protocols”
Indicator under Consideration

- Water Chemistry
- Physical Habitat
- Human Health and Recreational Indicator
  - (e.g., Pathogens, Fish Tissue)
- Biological
  - Algae (Periphyton/Phytoplankton)
  - Benthic Macroinvertebrates
  - Fish
Indicator Selection

- Workgroups are working to develop protocols, formulate cost estimates for indicators
- Develop criteria for selecting those that will be included in the survey
- The target date for selection of draft indicators w/protocols is Mid-2007
Benchmark or Standard for Assessment of Condition (a.k.a. reference condition)

- Define as “least disturbed”
  - defined as the biological condition found in water bodies with the least amount of human disturbance compared to similar water bodies in the region of interest

- Develop regionalized reference conditions
  - Not at expense of integrity of study

- Select as many reference sites as possible

- Interest in targeting highly disturbed sites
  - Not at the expense of reference sites

- Combination of hand-picked, probability-based, and screening criteria
Additional comments and inquiries should be directed to:

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