

EXCERPT
General Comments from Peer Reviewers

From:

PEER REVIEW FOR "WADEABLE STREAMS ASSESSMENT NATIONAL REPORT"

Prepared for:

**U.S. Environmental Protection Agency
Office of Water
Office of Science and Technology
Health and Ecological Criteria Division
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I. CHARGE TO THE PEER REVIEWERS

1. Examine and critique the Wadeable Streams Assessment Report. For example, did the report meet the stated objectives of reporting on indicators that reflect the biological condition of the nation’s streams resource and associated stressors?
2. Review and comment on the approach used to develop the WSA and analytical methods used. Is the data analysis approach appropriately documented and scientifically valid? Although this report is intended for the lay audience, does it appear that appropriate technical tools were used for the survey design and ecological indicators?
3. Does the organization and content of the document seem appropriate and does it present the material in a clear and concise manner for the lay public? Please explain your response.
4. Is the EPA using appropriate datasets and assumptions on which to base a scientific assessment?
5. Do the results and their presentation communicate clearly to the public the ecological condition of the resource?
6. Is the relationship between the stressors and biological indices adequately explained?
7. Are the analytical tools and their methods of application appropriate to meet the stated objectives?
8. The nutrient data is currently presented in the document in three condition classes (least, moderately, and most disturbed) based on regionally derived, reference site-based thresholds. An alternative approach would be to present the results as levels of concentration, pictured in the graph below. Is the presentation in the document or the alternative approach better at communicating the extent of nutrient stressors to the resource?
9. Developing thresholds for data analysis highlighted the differences in the quality of reference sites across regions. In your opinion, is the approach to accounting for the variance in the quality of the reference appropriate?
10. Based on your reading and analysis of the information provide, please identify your overall recommendations for the Wadeable Streams Assessment materials you have reviewed as:
 - 1 . Acceptable as is;
 - 2 . Acceptable with minor revisions (as indicated);
 - 3 . Acceptable with major revisions (as indicated); or
 - 4 . Not acceptable.

II. GENERAL COMMENTS

Peer Reviewer 1

The Wadeable Streams Assessment is a major contribution to the understanding of the ecological condition of the nation’s streams. The consistent application of a rigorous assessment of major components of stream ecosystems provides a timely and valuable perspective on the state of the nation’s surface waters. The methods are rigorous, thoroughly tested, and well documented. The text distills volumes of complex information into straight-forward, defensible assessments of the ecological patterns in ecoregions, three larger continental regions, and the contiguous United States.

Though many will not recognize the value in the convergence of several independent and conceptually different measures of aquatic ecosystems, the most profound aspect of the assessment is the overall consistency of the patterns revealed by different measures. These findings greatly strengthen the foundation for regional decision making and more effective application of national policies.

Peer Reviewer 2

In general, I think that the document is quite well written, plus the many maps and graphs enhance communication. The analogies to human health and human surveys seem effective.

Peer Reviewer 3

I think this is a critical report and commend EPA for designing, implementing, and reporting on the condition of Wadeable streams throughout the U.S. In many of our meetings with State and other federal agencies, there has been a consistent plea for information not on major rivers, but on the foundation and backbone of flowing waters – the smaller streams that sustain aquatic life and biodiversity in every watershed and serve as corridors, capillaries and arterioles of aquatic ecosystems. This is the first time that an estimate of stream condition in the U.S., with known certainty, can be provided, and the results are striking – over 40% of the target population of streams is in poor condition; a greater proportion than in good condition. My comments are intended to assist EPA in presenting the critical messages of this report to the public and Congress.

The Technical Charge to Peer-Reviewers and the Technical Appendix of the *Wadeable Streams Assessment* (WSA) Report stated this document is intended for the public and Congress as well as water quality managers. The WSA Executive Summary or Report, however, never explicitly identifies the intended audience. It discusses the need of Congress and the public to know, but I think either here or in a Preface you need to explicitly state who the intended audience is for this report.

In my opinion, the WSA results are useful at the national level and of limited interest at the three major climatic zones and nine Level II ecoregions. The major climatic zone and ecoregion results provide neither useful management information nor place-based information. I think the broad public is going to have difficulty understanding why major climate zones are being used if results from Florida are combined with results from Montana or results from Maine are being combined with results from Arkansas in describing stream condition. Level II ecoregions provide no better sense of place or management perspective.

In addition, I think you will have difficulty defending these assessment categories or reporting units scientifically. I do not believe you can defend the sentence on page 14, 2nd paragraph, lines 1-3. “Water resources within a particular ecoregion have similar natural characteristics and similar responses to

natural and anthropogenic stressors.” I agree with statement for Level III or IV ecoregions, but not at Level II and certainly not for climate and landform reporting regions. A glaciated stream in Minnesota is not going to respond similarly to an unglaciated, delta stream in Mississippi (Both in the Plains and Lowland climate region) Similarly, I think you will get significant disagreement that a tidal stream in New Jersey is going to respond similarly to a stream in Missouri (Both in the Coastal Plain ecoregion). I understand scientifically how ecoregions are delineated, but this report is intended for a broad audience who doesn’t understand and likely doesn’t care because ecoregions are outside both their understanding and context of place. They do, however, know (hopefully) that St. Louis doesn’t have a coastline. At a minimum, EPA Regions would be preferred for presentation because there is at least a management frame with interest at this scale of stream assessment.

Because EPA has marketed watersheds and watershed management for more than a decade, I suggest major drainage basins are more appropriate reporting units. At the scale of the Level II ecoregion reporting units, you likely have greater similarity among streams in major drainage basins than in the ecoregions – New England Region, Mid-Atlantic Region, South Atlantic-Gulf Region, Great Lakes Region, Ohio Region, Tennessee Region, Upper Mississippi Region, Lower Mississippi Region...Upper Colorado Region, Lower Colorado Region, Pacific Northwest Region, Great Basin Region, etc. In fact, you have a greater number of more recognizable reporting units with major drainage basins than you do with Level II ecoregions. If the sample density is insufficient to satisfy a desired minimum error in any major drainage basin, I would aggregate major drainage basins.

I think incorporating an ecoregion perspective in watershed and water resources management is essential, but this report has different objectives. I think its objectives can be better achieved by using EPA Regions and major drainage basins as the reporting units. If there is vehement opposition to major drainage basins, I would recommend only EPA Regions as reporting units and not include climatic and landform zones or Level II ecoregions.

Peer Reviewer 4

EPA should publish this report, as it describes defensible and relevant results, but only after seriously responding to suggestions outlined below. Many of this reviewer’s concerns do not fit conveniently under any of the charge questions, so most appear in response to Section III near the end of the charge questions.