



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON D.C. 20460

OFFICE OF THE ADMINISTRATOR
SCIENCE ADVISORY BOARD

September 30, 2014

EPA-SAB-14-007

The Honorable Gina McCarthy
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

Subject: Science Advisory Board (SAB) Consideration of the Adequacy of the Scientific and Technical Basis of the EPA's Proposed Rule titled "Definition of Waters of the United States under the Clean Water Act"

Dear Administrator McCarthy:

As part of its statutory duties, the Science Advisory Board (SAB) may provide advice and comment to you on the adequacy of the scientific and technical basis of certain planned EPA actions. The Environmental Research, Development, and Demonstration Authorization Act of 1978 (ERDDAA) requires the agency to make available to the SAB proposed criteria documents, standards, limitations, or regulations provided to any other Federal agency for formal review and comment, together with relevant scientific and technical information on which the proposed action is based. The SAB may then provide advice and comments on the adequacy of the scientific and technical basis of the proposed action.

This letter documents the SAB's activities related to the proposed rule "Definition of 'Waters of the United States' Under the Clean Water Act" released on March 25, 2014, and provides advice and comments related to that proposal. Briefly, the SAB finds that the available science provides an adequate scientific basis for the key components of the proposed rule. Although water bodies differ in degree of connectivity that affects the extent of influence they exert on downstream waters (i.e., they exist on a "connectivity gradient"), the available science supports the conclusion that the types of water bodies identified as waters of the United States in the proposed rule exert strong influence on the physical, chemical, and biological integrity of downstream waters. Additional comments regarding the Board's major findings and recommendations to strengthen the science supporting the rule are provided below.

Background

In SAB deliberations leading to the letter sent to you on July 26, 2013, *Science Advisory Board (SAB) Discussions about EPA Planned Actions in the Fall 2012 Unified (Regulatory) Agenda and their Supporting Science* (EPA-SAB-14-003), the chartered SAB discussed the agency's plan to propose the rule. The Board also discussed the EPA's plan to use the EPA's September 2013 draft report,

Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence (connectivity synthesis document) to inform determinations in the rule. In those discussions, the chartered SAB highlighted the importance of the rulemaking and the need for SAB advice and comment on the adequacy of the science to support the rule.

An *ad hoc* panel of the SAB has completed a peer review of the EPA's draft connectivity synthesis report. The SAB's peer review report was approved on September 26, 2014, and is being finalized to send to you shortly. For that peer review, the agency did not ask the SAB to consider the adequacy of the science to support the proposed rule. Because this question was not considered during the peer review, I requested the panel members to comment on the scientific and technical basis of the EPA proposed rule. In response to my request, the SAB panel held public teleconferences on August 20 and 21, 2014, (79 FR 40100-40101) to discuss this topic.

A Work Group of chartered SAB members considered comments provided by panel members, agency representatives, and the public on the adequacy of the science informing the proposed rule. This Work Group, chaired by Board member Dr. James Mihelcic, then took the lead in SAB deliberations on this topic at a public teleconference held on September 29, 2014, where the chartered Board discussed the advice and comments in this letter.

SAB Advice and comment on the science informing the proposed rule

The SAB finds that the available science provides an adequate scientific basis for key components of the proposed rule. The following comments summarize major points regarding the adequacy of the scientific and technical basis of the proposed action. The SAB also provides recommendations for strengthening the science informing the rule.

Tributaries

There is strong scientific evidence to support the EPA's proposal to include all tributaries within the jurisdiction of the Clean Water Act. Tributaries, as a group, exert strong influence on the physical, chemical, and biological integrity of downstream waters, even though the degree of connectivity is a function of variation in the frequency, duration, magnitude, predictability, and consequences of physical, chemical and biological processes.

The Board advises the EPA to reconsider the definition of tributaries because not all tributaries have ordinary high water marks. An ordinary high water mark may be absent in ephemeral streams within arid and semi-arid environments or in low gradient landscapes where the flow of water is unlikely to cause an ordinary high water mark. The Board advises the agency to consider changing the wording in the definition to "bed, bank, and other evidence of flow." In addition, tributaries are not typically defined to include lentic systems (e.g., lakes, ponds, wetlands). Thus, the EPA may want to consider whether flow-through lentic systems should be included as adjacent waters and wetlands, rather than as tributaries.

Adjacent Waters and Wetlands

The available science supports the EPA's proposal to include adjacent waters and wetlands as waters of the United States. This is because adjacent waters and wetlands have a strong influence on the physical, chemical, and biological integrity of navigable waters. Importantly, the available science supports

defining adjacency or determination of adjacency on the basis of functional relationships, not on how close an adjacent water is to a navigable water. The Board also notes that local shallow subsurface water sources and regional groundwater sources can strongly affect connectivity. Thus, the Board advises the EPA that adjacent waters and wetlands should not be defined solely on the basis of geographical proximity or distance to jurisdictional waters. The science also supports consideration of the temporal dimension of connectivity to define adjacent waters and wetlands. This is particularly important in arid systems with intermittent and ephemeral waters.

Other Waters

The scientific literature has established that “other waters” can influence downstream waters, particularly when considered in aggregate. Thus, it is appropriate to define “other waters” as waters of the United States on a case-by-case basis, either alone or in combination with similarly situated waters in the same region. As mentioned previously for adjacent waters, distance should not be the sole indicator used to evaluate the connection of “other waters” to jurisdictional waters.

There is also adequate scientific evidence to support a determination that certain subcategories and types of “other waters” in particular regions of the United States (e.g., Carolina and Delmarva Bays, Texas coastal prairie wetlands, prairie potholes, pocosins, western vernal pools) are similarly situated (i.e., they have a similar influence on the physical, chemical and biological integrity of downstream waters and are similarly situated on the landscape) and thus could be considered waters of the United States. Furthermore, as the science continues to develop, other sets of wetlands may be identified as “similarly situated.” The Board notes, however, that the existing science does not support *excluding* groups of “other waters” or subcategories thereof.

Exclusions

The Clean Water Act exclusions of groundwater and certain other exclusions listed in the proposed rule and the current regulation do not have scientific justification. For example, the Clean Water Act excludes groundwater, including groundwater drained through subsurface drainage systems. The available science, however, shows that groundwater connections, particularly via shallow flow paths in unconfined aquifers, can be critical in supporting the hydrology and biogeochemical functions of wetlands and other waters. Groundwater also can connect waters and wetlands that have no visible surface connections.

The proposed rule identifies other exclusions not justified by science. There is, for example, a lack of scientific knowledge to determine whether ditches should be categorically excluded. Many ditches in the Midwest would be excluded under the proposed rule because they were excavated wholly in uplands, drain only uplands, and have less than perennial flow. However, these ditches may drain areas that would be identified as wetlands under the Cowardin classification system and may provide certain ecosystem services. Although gullies, rills, and non-wetland swales are excluded by the rule, the proposed rule’s preamble notes that these features can be important conduits for moving water between jurisdictional waters, making them important with respect to hydrological and other forms of connectivity. Also, although excluded from jurisdiction under the proposed rule, artificial lakes or ponds, or reflection pools, created by excavation, diking, or construction can be directly connected to jurisdictional waters by groundwater, which may be shallow as well as deep groundwater in unconfined aquifers. It is also not clear in the proposed rule how engineered structures would be treated, especially given changes in technology, urbanization, or economic sectors. Some examples of such changes in

engineered structures include: (1) design of stormwater management systems that more closely mimic natural systems (i.e., low impact development technology); (2) demand for lower quality water sources that results in construction of desalination brine storage basins; (3) the impact of urbanization that has led to construction of artificial lakes and ponds that may have connections to downstream waters; (4) agricultural sectors that utilize aquaculture and rice paddies; and (5) expanding domestic energy production that results in construction of structures such as oil and gas tank basins and in-stream sediment ponds used to collect waste from surface coal mining.

Finally, the SAB has a specific recommendation for strengthening the presentation of the science informing this regulatory action. The SAB recommends that the EPA clarify in its general communications and in the preamble to the final rule that “significant nexus” is a legal term, not a scientific term.

Recommendations for next steps

In conclusion the SAB has determined that the available science, as summarized in the preamble to the proposed rule and the EPA technical document peer reviewed by the SAB, provides an adequate scientific and technical basis for the proposed rule. The Board has made several recommendations to strengthen definitions and reconsider exclusions in the proposal. For a more detailed summary of many of the points in this letter, please see the memorandum provided by the Chair of the SAB Panel for the Review of the EPA Water Body Connectivity Report.¹

The SAB does not expect to provide further advice and comment on the scientific and technical basis for the proposed action at this time. We look forward to your response to our comments on the science supporting this important rulemaking.

On behalf of the SAB, I thank you for the opportunity to support the EPA through consideration of the science supporting this proposed action.

Sincerely,

/Signed/

Dr. David T. Allen, Chair
Science Advisory Board

Enclosure

1) Roster, EPA Science Advisory Board

¹September 2, 2014, Memorandum from the Dr. Amanda Rodewald to Dr. David Allen, Comments to the chartered SAB on the Adequacy of the Scientific and Technical Basis of the Proposed Rule Titled “Definition of ‘Waters of the United States’ Under the Clean Water Act.” Available at [http://yosemite.epa.gov/sab/sabproduct.nsf/F6E197AC88A38CCD85257D49004D9EDC/\\$File/Rodewald_Memorandum_WOUS+Rule_9_2_14.pdf](http://yosemite.epa.gov/sab/sabproduct.nsf/F6E197AC88A38CCD85257D49004D9EDC/$File/Rodewald_Memorandum_WOUS+Rule_9_2_14.pdf) (last accessed 09/29/14).¹

NOTICE

This report has been written as part of the activities of the EPA Science Advisory Board (SAB), a public advisory group providing extramural scientific information and advice to the Administrator and other officials of the Environmental Protection Agency. The SAB is structured to provide balanced, expert assessment of scientific matters related to problems facing the agency. This report has not been reviewed for approval by the agency and, hence, the contents of this report do not represent the views and policies of the Environmental Protection Agency, nor of other agencies in the Executive Branch of the Federal government, nor does mention of trade names of commercial products constitute a recommendation for use. Reports of the SAB are posted on the EPA website at <http://www.epa.gov/sab>.

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