

Congress of the United States

House of Representatives

COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY

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November 6, 2013

Dr. Amanda Rodewald, Chair, Science Advisory Board Panel for the Review of the EPA Water Body Connectivity Report
Dr. David Allen, Chair, EPA Science Advisory Board
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dear Drs. Rodewald and Allen:

On September 17, 2013, the Environmental Protection Agency (EPA) announced the availability of the Draft Science Synthesis Report on the Connectivity of Streams and Wetlands to Downstream Waters (Draft Connectivity Report or Report), which synthesizes the peer-reviewed scientific literature on the connectivity of streams and wetlands relative to downstream waters.¹ On the same day, EPA also announced that it had sent a proposed rule on the scope of Clean Water Act (CWA) jurisdiction to the Office of Management and Budget (OMB) for interagency review. EPA states that the Report's findings will inform the upcoming rulemaking on CWA jurisdiction.

Along with the Report, EPA released technical charge questions to the Science Advisory Board (SAB) expert panel who will conduct a peer review of the Report.² EPA's charge questions are focused on verifying the technical accuracy of the Report's findings that streams and most wetlands are connected to downstream waters. EPA does not, however, ask the important questions about the significance of these connections to the health or integrity of downstream waters. It is critical that the SAB panel address such important scientific questions, including identification of key limitations or uncertainties in the science. The answers to these questions will assist policy makers in clarifying the scope of CWA jurisdiction over waters of the United States.

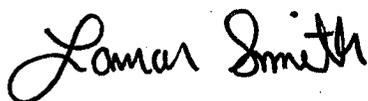
¹ Notice Announcing Release of Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence (External Review Draft) (Sept. 17, 2013), available at <http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=238345>.

² SAB, Connectivity of Streams and Wetland to Downstream Waters: A Review and Synthesis of the Scientific Evidence, Technical Charge to External Peer Reviewers, available at <http://yosemite.epa.gov/sab/sabproduct.nsf/02ad90b136fc21ef85256eba00436459/7724357376745f48852579e60043e88c!OpenDocument>

Pursuant to our authority under the Environmental Research, Development and Demonstration Authorization Act (ERDDAA), the Committee on Science, Space, and Technology is providing the SAB Panel for the Review of EPA's Water Body Connectivity Report and SAB additional charge questions related to the Report. Mindful of the unique role created for the Committee under the statute, we anticipate a robust examination of the issues encompassed in the charge questions.

We request that the SAB Panel for the Review of EPA's Water Body Connectivity Report and the SAB respond to the additional charge questions set forth below.

Sincerely,



Rep. Lamar Smith
Chairman
Committee on Science, Space,
and Technology



Rep. Chris Stewart
Chairman
Subcommittee on Environment

cc: Rep. Eddie Bernice Johnson, Ranking Member, Committee on Science, Space, and Technology
Rep. Suzanne Bonamici, Ranking Member, Subcommittee on Environment, Committee on Science, Space, and Technology
The Honorable Gina McCarthy, Administrator, EPA
Mr. Christopher Zarba, Acting Director, SAB Staff Office
Ms. Iris Goodman, SAB Designated Federal Officer
Dr. Thomas Armitage, SAB Designated Federal Officer

**Charge Questions of the Science, Space, and Technology Committee for
EPA's SAB Review of the Draft Connectivity Report**

Background

The CWA regulates “navigable waters” defined as “waters of the United States.” 33 U.S.C. §§ 1344, 1362(7). The United States Supreme Court has examined the meaning of this statutory language three times. In *United States v. Riverside Bayview Homes, Inc.*, 474 U.S. 121 (1985), the Supreme Court upheld the regulation of wetlands adjacent to navigable waters because it found that the adjacent wetlands were “inseparably bound up” with the navigable waters. In *Solid Waste Agency of N. Cook Cnty v. U.S. Army Corps of Eng'rs*, 531 U.S. 159 (2001) (“*SWANCC*”), the Supreme Court rejected the assertion of jurisdiction over isolated ponds because they lacked a significant nexus to navigable waters. After *SWANCC*, the government asserted that the *SWANCC* decision applied only to isolated waters and that if a water “connected” to navigable waters, it was not an isolated water and could therefore be regulated as a navigable water under the CWA.³ This “any connection” theory essentially reached all wet areas, including ditches, drains, desert washes, and ephemeral waters that flow infrequently and are far removed from traditional navigable waters.

In *Rapanos v. United States*, 547 U.S. 715 (2006), the Supreme Court heard two consolidated cases involving the assertion of CWA jurisdiction over sites with nearby drains and ditches based on the agencies’ determination that the sites were connected to tributaries of navigable waters. A majority of the Justices, looking at the statutory language, rejected this “any connection” theory of jurisdiction, finding it was too broad a standard. The plurality held that the plain language of the CWA “does not authorize this ‘Land Is Waters’ approach to federal jurisdiction” and that “[i]n applying the definition to ephemeral streams, wet meadows, storm sewers and culverts, directional sheet flow during storm events, drain tiles, manmade drainage ditches, and dry arroyos in the middle of the desert, the Corps has stretched the term ‘waters of the United States’ beyond parody.” 547 U.S. at 734 (internal quotations omitted). Instead, the plurality held that the CWA “confers jurisdiction over only relatively *permanent* bodies of water.” *Id.* (emphasis in original).

Justice Kennedy also criticized the Corps’s standard as too broad because it “leave[s] wide room for regulation of drains, ditches, and streams remote from any navigable-in-fact water and carrying only minor water volumes” 547 U.S. at 781 (Kennedy, J., concurring). In his *Rapanos* concurrence, Justice Kennedy established a “significant nexus” standard. *Id.* at 780. Justice Kennedy noted that consideration of “the quantity and regularity of flow” and proximity to traditional navigable waters is important for assessing whether there is a significant nexus. *Id.* at 786. Accordingly, following the *Rapanos* decision, identifying which waters have a *significant* nexus, not just *a* nexus, is critical.

Noting on several occasions that the reach of the CWA is notoriously unclear, the Supreme Court also called on the agencies to do a rulemaking and clarify key jurisdictional

³ See, e.g., Brief for the United States at 31, *Rapanos v. United States*, 547 U.S. 715 (2006) (No. 04-1034); *Rapanos*, 547 U.S. at 780 (Kennedy, J., concurring) (“The Corps’ theory of jurisdiction in these consolidated cases—agency to tributaries, however remote and insubstantial—raises concerns . . .”).

standards.⁴ Specifically, Justice Kennedy noted that the presence of an ordinary high water mark is not a reliable standard for determining whether a water is a jurisdictional tributary. *Rapanos*, 547 U.S. at 781.⁵ Indeed, the regulated public similarly has long called for a rulemaking to clarify the reach of the CWA and define key jurisdictional terms such as “tributary” and “adjacent.”

The agencies have stated that this report “will provide the scientific basis needed to clarify CWA jurisdiction” and “will inform [the] upcoming joint USEPA/Army Corps of Engineers rulemaking to enhance protection of the chemical, physical, and biological integrity of our nation’s waters”⁶ Therefore, the Committee on Science, Space, and Technology believes that it is critical for the charge questions to be focused on the relevant issues that have been plaguing the agencies and the public for decades.⁷ Accordingly, with this background in mind, we ask that the SAB Panel for the Review of EPA’s Water Body Connectivity Report and the SAB respond to the following questions:

Quantification of “Significant Nexus”

The report concludes that all streams and most wetlands are connected to downstream waters. It does not appear that the report evaluates anything more than the presence of connectivity among “waters.” The real question, however, is the scientific significance of these connections on downstream traditional navigable waters.

- Does the science provide a method to establish whether connections are significant? What specific metrics can be used to determine if a measured connection (chemical, physical, or biological) significantly influences the health or integrity of a downstream water body?
- How will a “significance” threshold be determined? How will agencies be able to quantify that an upstream water body exerts a significant influence on the health or integrity of a downstream traditional navigable water, as opposed to merely a measured connection?
- Should the frequency and duration of flow and proximity to navigable waters play a role in determining the significance of a connection? If so, how?
- Are there key limitations or uncertainties in establishing scientific significance of connectivity?

⁴ See, e.g., *Rapanos*, 547 U.S. at 726 (plurality); *id.* at 782 (Kennedy, J., concurring); *id.* at 758 (Roberts, C.J., concurring); *Sackett v. EPA*, 132 S. Ct. 1367, 1375 (2012) (Alito, J., concurring).

⁵ See also Matthew K. Mersel, U.S. Army Corps of Engineers, *The Ordinary High Water Mark: Concepts, Research, and Applications* (Mar. 20, 2013) (acknowledging that Corps standard for identifying streams is “vague” and has been applied “inconsistently”).

⁶ Notice Announcing Release of Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence (External Review Draft) (Sept. 17, 2013), available at <http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=238345>.

⁷ See U.S. Gen. Accounting Office, *GAO-04-297, Waters and Wetlands: Corps of Engineers Needs to Evaluate Its District Office Practices in Determining Jurisdiction at 12-16* (Feb. 2004) (hereinafter, GAO Report).

Defining "Stream"

In its glossary, the report defines a stream as "a relatively small volume of flowing water within a visible channel, including subsurface water moving in the same direction as the surface water, and lateral flows exchanged with associated floodplain and riparian areas." Draft Connectivity Report at A-17. Then, it finds that "[a]ll tributary streams, including perennial, intermittent, and ephemeral streams, are physically, chemically, and biologically connected to downstream rivers." *Id.* at 1-6.

- What is the scientific basis for including subsurface groundwater in the definition of "stream"?
- What is the scientific basis for including overland flows in floodplain areas in the definition of "stream"?
- Does the science support the point that all streams (channels that carry water) have a *significant* nexus to traditional navigable waters? Does the science establish that serving as a conduit or channel for rainwater or stormwater is sufficient to be classified as a stream? If so, explain.
- What is the difference between a stream (under the report's definition) and a roadside or agricultural ditch?
- Is there scientific evidence that evaluates the performance of ditches? If so, do a majority of ditches perform the entire suite of functions performed by streams?
- How should frequency and duration of flow and proximity to navigable waters be considered in assessing whether a feature should be classified as a stream?

Isolated Waters

The report discusses "geographically isolated wetlands," which it defines as "wetland[s] that [are] completely surrounded by uplands." Draft Connectivity Report at A-6. The report notes that "'geographic isolation' should not be confused with functional isolation, because geographically isolated wetlands can still have hydrological and biological connections to downstream waters." *Id.* at 1-12.

- Does the science establish specific metrics to determine if a "geographically isolated water" exerts a significant influence on the health or integrity of a downstream traditional navigable water body?
- Did the peer-reviewed studies examined with respect to wetlands evaluate features which met the Cowardin definition of "wetland" or the Federal regulatory definition of "wetland"?
- Under the Cowardin definition, an area is classified as a wetland if it has one or more of three characteristics: hydrology, hydrophytes, and hydric soils. Under the Federal regulatory definition, however, an area must exhibit all three characteristics to be classified as a wetland. Is it appropriate for this report to rely on the broader Cowardin definition of "wetland" rather than the Federal regulatory definition?
- Is it appropriate for this report, which defines "geographically isolated wetland" as "a wetland that is completely surrounded by uplands," *id.* at A-6, to rely on the narrower Cowardin concept of "upland" rather than the Federal regulatory understanding?
- The report identifies a number of functions served by unidirectional wetlands, including acting as sinks and transformers for various pollutants and offering biological

connectivity to downstream waters. *Id.* at 1-12. Which of these functions are also served by the uplands adjacent to and nearby the unidirectional wetlands?

- The report identifies a study reflecting that, in a 4-year period, nearly 20% of the precipitation that fell on a wetland complex in a Texas coastal plain flowed as surface runoff to a nearby waterway. *Id.* at 1-12. Do other studies show that surface runoff also flows across upland features into nearby waterways? Do these and other studies also show that some of the water that is not transferred to nearby waterways as surface runoff is transferred as groundwater? What is the significance of the hydrological connectivity between these uplands and downstream waters like that noted by the report in the last sentence of item “d” on page 1-12?
- The report notes that infrequent events, such as large floods, temporarily connect nearby or distant streams or wetlands to rivers and can therefore have large, long-lasting effects. *Id.* at 1-5. Do these infrequent, large flood events also connect uplands with those same streams in the same fashion?

Navigable Waters

Under Justice Kennedy’s “significant nexus” standard, features are jurisdictional only where the feature has a significant nexus with “traditional navigable waters.”

- Does the science look at connectivity with “traditional navigable waters” or merely downstream waters?

Site-Specificity and Regional Variability

The effects of a tributary on the downstream waters vary over time and between tributaries as a result of the differences in water volume, sediment characteristics, and water quality. These variations are largely an effect of the differences in the size of the tributary relative to the downstream waters. The report acknowledges that “[c]limate, watershed topography, soil and aquifer permeability, the number and types of contributing waters, their spatial distribution in the watershed, interactions among aquatic organisms, and human alteration of watershed features, among other things, can act individually or in concert to influence stream and wetland connectivity to, and effects on, downstream waters.” Draft Connectivity Report at 1-5. Although the report attempts to address regional variability using several case studies for particular regions and features, it draws sweeping, broad conclusions.

- Given the substantial variability in the influence of any given tributary on any particular water, does the science support making generalizations about tributary impacts on water quality?
- Does the science support making predictions about stream impacts across regions? If so, explain.
- Should such an approach be broadly applied within a region, or is it more accurate for determinations to be made on a site-specific basis? If so, when and under what circumstances?
- How will metrics that are used to measure connectivity be calibrated or modified for application to various classes of waters in different geographic regions or even distinct watersheds within geographic regions?

- Does the science support making presumptions that all streams in a region or of the same class perform the same functions given the substantial variability among parameters such as stream size, discharge, and physical or ecological contribution to downstream waters? If so, explain.
- The report determines that there is “a gradient of hydrologic connectivity-isolation with respect to river networks, lakes, or marine/estuarine water bodies” and that “the existence of this gradient among wetlands of the same type or in the same geographic region can make it difficult to determine or generalize, from the literature alone, the degree to which particular wetlands (individually or as classes), including geographically isolated wetlands, are hydrologically connected.” *Id.* at 1-12. If generalization is not possible in the context of isolated waters due to the variety of factors that affect contribution to downstream waters, and as noted on p. 1-5 there are numerous factors resulting in variability in the contributions of streams to downstream waters, how can the report generalize about the degree to which particular streams are connected?
- What does the scientific data show is the range of variability for ephemeral streams for each of the factors that influence stream connectivity to downstream waters, including climate, nutrient processing, water storage, habitat, ecology, frequency and duration of flow, and proximity to traditional navigable waters? For intermittent streams? For perennial streams?

Temporal Variability

Watershed science recognizes seasonal and year-to-year variation in flow and climate. Studies have also concluded that the results of watershed-specific studies cannot be generalized to all regions due to differences in vegetation, geology (e.g., slope), the amount of detritus and invertebrates exported downstream, and climate. Others note that the suitability of a hydrological connection as a biological connection varies among species and also on a regional or even local basis. The report acknowledges, “Since rivers develop and respond over time and are functions of the whole watershed, understanding the integration of contributions and effects over time is also necessary to have an accurate understanding of the system, taking into account the duration and frequency of material export and delivery to downstream waters.” Draft Connectivity Report at 1-14. The report acknowledges regional variability and provides several case studies for particular areas, but its broad conclusions do not account for temporal variability.

- Given that seasonal and year-to-year variation in flow and climate exist, and that those variations affect physical, chemical, and ecological processes, how do determinations of connectivity account for the temporal variation in physical, chemical, and biological processes?
- To enable determinations of connectivity for any given system, are measurements over the course of multiple seasons or years required? If made at a single time point or in a single year, will the determination be considered relevant and applicable indefinitely, or will some periodic review be required?

Draft CWA Rule

According to ERDDAA: "The Administrator, at the time any proposed criteria document, standard, limitation, or regulation under the... Federal Water Pollution Control Act

[33 U.S.C. 1251 et seq.]... is provided to any other Federal agency for formal review and comment, shall make available to the Board such proposed criteria document, standard, limitation, or regulation, together with relevant scientific and technical information in the possession of the Environmental Protection Agency on which the proposed action is based.... The Board may make available to the Administrator, within the time specified by the Administrator, its advice and comments on the adequacy of the scientific and technical basis of the proposed criteria document, standard, limitation, or regulation, together with any pertinent information in the Board's possession."

- Pursuant to ERDDAA, have you been provided a copy of the EPA's draft rule to clarify jurisdiction of the Clean Water Act?
- If no, does support or approval of the Draft Connectivity Report constitute support or approval of EPA's draft rule by the Science Advisory Board or the Panel for the Review of the EPA Water Body Connectivity Report?