

TESTIMONY SUBMITTED FOR THE RECORD
SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
HEARING ON THE TECHNICAL, SCIENTIFIC, AND LEGAL BASIS FOR THE,
CLEAN WATER RULE: DEFINITION OF ‘WATERS OF THE UNITED STATES’

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Introduction

Good morning, Mr. Chairman and members of the Committee. I am Michael Josselyn, Principal with the environmental consulting firm, WRA, Inc., with offices in California and Colorado. I am primarily responsible for assisting our federal, state, and private clients in compliance with Section 404 of the Clean Water Act. I have 38 years of experience in the field and am a Certified Professional Wetland Scientist. I served on the Environmental Protection Agency’s Science Advisory Board Expert Panel (Panel) to review the EPA’s *Connectivity Report*¹ which was prepared during the rulemaking process for the 2015 “Waters of the United States” (WOTUS) rule. My testimony today focuses on the Connectivity Report and the review process.

The draft Connectivity Report focused entirely on the scientific literature that was reviewed on the connection between headwaters, wetlands, and streams. The draft Report confirmed the basic hydrologic principle that all parts of a watershed are connected to some degree. Of course, the draft Report did not address the policy and legal questions on which waters should be federally regulated based on how that connectivity affects water quality in the Nation’s navigable waters. The Report’s conclusion that all water (and the material contained in it) flows downhill did not address the issue of where regulators should establish regulatory lines within the broad geographic landscape in the US.

The Panel recognized that concept of connectivity was a gradient, not a binary property (connected or not connected), and that connectivity should “recognize variation in the frequency,

¹ Environmental Protection Agency. 2015. Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence. EPA/600/R-14/475F

duration, magnitude, predictability, and consequences of those connections”.^{2,3} This is most important in those drainages with very infrequent flows—of a few days to weeks such as the intermittent and ephemeral streams referenced in Justice Kennedy’s concurring *Rapanos* opinion. The Panel concluded that there was strong evidence on connectivity within tributary systems overall, however, it recommended that the “EPA should recognize that there is a gradient of connectivity”⁴. In addition, the draft Report did not provide metrics for how to quantify connectivity or consider methodological and technical advances that would support the EPA’s and Corps’ determinations regarding which waters are subject to federal jurisdiction.

The EPA adopted a WOTUS rule that redefined all tributaries as “waters of the US”, no matter how small in volume or in frequency of flow. The definition also adopted distances for the inclusion of wetlands as adjacent to such tributaries. The Expert Panel specifically stated “ that adjacent waters and wetlands should not be defined solely on the basis of geographical proximity or distance to jurisdictional waters”^{5,6}. In addition, the WOTUS rule set a low threshold for the inclusion of wetlands under the rule’s significant nexus test procedure. It provided a list of nine general functions performed by wetlands and stated that if any one of them could be demonstrated to occur, either within the subject wetland or in combination with other wetlands within a very large watershed, it would have a significant nexus and be considered a “water of the US”. Under this standard, there would be few situations where a wetland would not meet the significant nexus test. This is not consistent with the Panel’s recommendation to consider connectivity on a gradient from high to no probability of an effect on downstream waters.

The Panel was initially convened to review the Connectivity Report, but was later asked to review the proposed rule. The proposed rule was issued before our review of the draft report was completed and the revised Connectivity Report issued. The Panel members did not reach a consensus on the proposed rule and the Panel letter was a compilation of comments from the Panel members.

I am a strong supporter of the use of evidence-based science in assisting agencies and legislators in developing regulatory policy. The Connectivity Report is a compilation of our knowledge about rivers and wetlands. The Panel recommendations were focused on the interpretation of the science. No new data analysis or scientific findings were established as a result of this effort. Most importantly, the Panel was told by the EPA that its job was not to establish criteria for regulatory decisions nor to evaluate legal interpretations of Supreme Court decisions.

² Letter to Gina McCarthy. October 17, 2014 SAB Review of the Draft EPA Report Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence

³ Page 2, Line 6

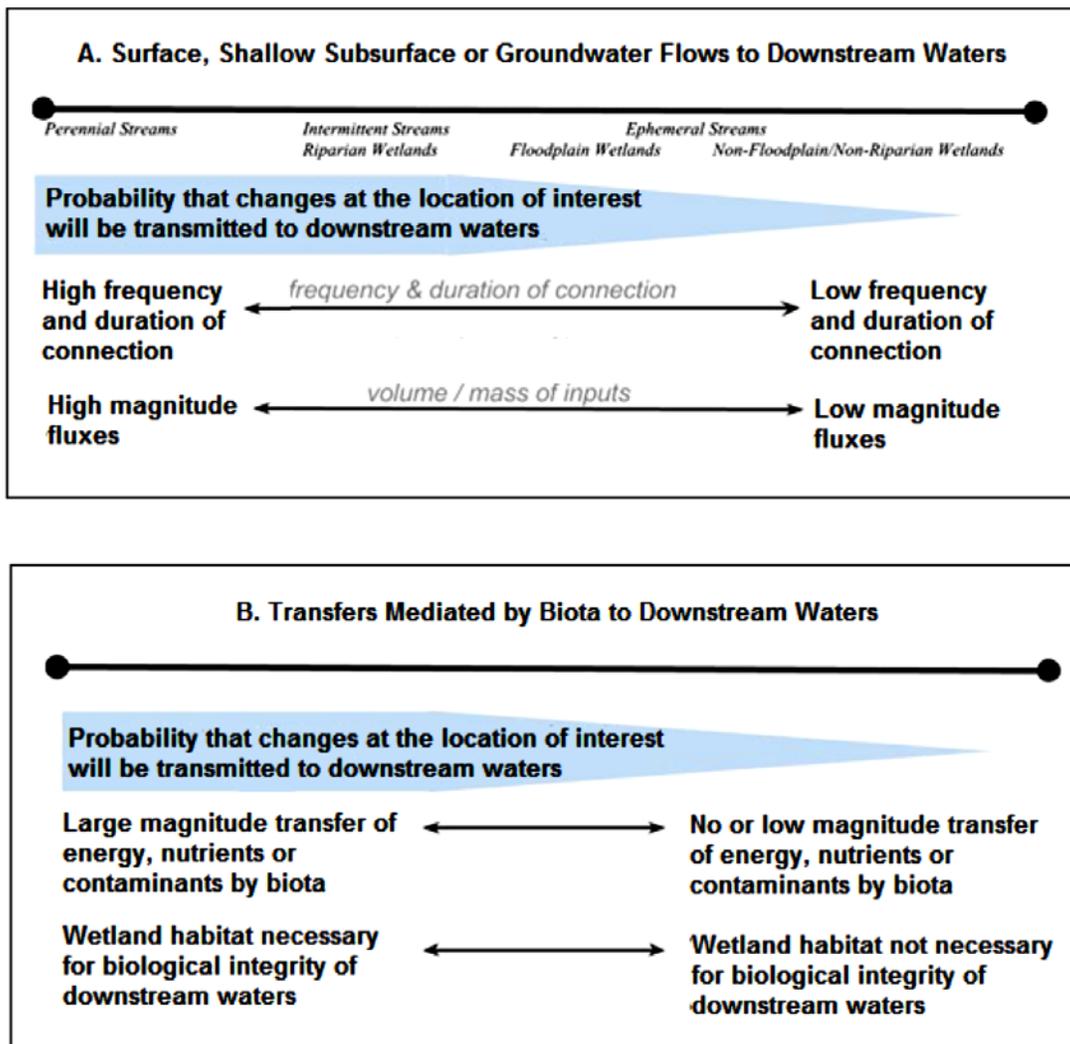
⁴ Page 3, Line 5

⁵ Letter to Gina McCarthy. September 30, 2014. 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”

⁶ Page 3, Line 5

Connectivity occurs on a Gradient

The Panel found that “the review of the scientific literature strongly supports the conclusion that streams and ‘bidirectional’ floodplain wetlands are physically, chemically, and/or biologically connected to downstream navigable waters; however, these connections should be considered in terms of a connectivity gradient”⁷. The presence of a gradient that defines the effects on downstream waters was not discussed in the draft version of the Connectivity Report; however, it became an important element in the discussions by the Panel. The Panel developed a figure to explain what was meant by its recommendation:



In the upper figure, the Panel concluded that there was a high probability (as shown by the width of the blue bar) that perennial streams and intermittent streams will have a high degree of connectivity to downstream waters given the frequency and duration of flow and the amount of

⁷ Page 1, Line 5 of October 17, 2014 Letter

material that could be transported to those downstream waters. Similarly, for biological factors (shown in the lower portion of the figure), the scientific evidence that perennial and intermittent streams transported materials downstream was also high, with less probability associated with ephemeral streams. Riparian wetlands with direct connection to streams have a high probability of affecting downstream waters; whereas connectivity with floodplain and non-floodplain wetlands is much lower. The Panel repeatedly recommended that the EPA develop more quantitative measures and criteria to assess connectivity on this gradient.

The plurality opinion written by Justice Scalia in *Rapanos* stated that those perennial and intermittent streams including “seasonal rivers, which contain continuous flow during some months of the year but no flow during dry months” are “waters of the United States” and that wetlands, such as the riparian wetlands discussed by the Panel, which have a “continuous surface water connection” should also be regulated under the Clean Water Act. This is entirely consistent with the findings of the Panel that found a high probability that perennial and intermittent streams and the wetlands adjacent to them can affect water quality in downstream “navigable waters”.

The degree of connectivity and the role of ephemeral streams and wetlands located far from tributaries is, of course, the subject of Justice Kennedy’s concurring opinion that focused on a finding of a significant nexus to support the role of these features in affecting downstream water quality that is more than speculative or insubstantial. To that point, the scientific literature is less convincing and the Panel recommended more analysis and further study on those issues. The final Connectivity Report acknowledged the relatively small body of peer reviewed literature available on ephemeral streams and non-floodplain wetlands not connected with tributaries, particularly on their effect on downstream waters (see attached Table 6-2 in the Report). Nonetheless, the EPA concluded that all tributaries should be considered “waters” regardless of their flow regime whereas wetlands outside of floodplains required a significant nexus analysis.

The Panel was only provided a draft of the proposed Rule after it had completed the majority of its work reviewing the draft Connectivity Report. Thus, there was little opportunity to evaluate the context of how the science in the Connectivity Report would be used to inform the development of the WOTUS rule. The SAB requested panel members’ view points on the proposed Rule; however, this was not accompanied by the usual robust discussion amongst Panel members. The resulting document prepared the Panel was a compendium of comments and, as noted in the September 2014 letter, did not represent a consensus opinion. It was my view⁸, based on a review of the literature and my experience with arid western streams, that connectivity of both tributaries and wetlands occurs on a gradient. I provided the Panel with my analysis of references cited in the draft Connectivity Report showing only two studies (out of

⁸ Shared with another Panel member, Dr. Mark Murphy, from Arizona, who also commented that the gradient approach to connectivity should also apply to tributaries as well as wetlands.

1000 cited in the draft report) actually reported on first order (headwater) streams and, in those studies, reduced ecological function was found in upstream reaches which supports the gradient theory. In addition, the lack of appropriate mapping scales for determining the distribution of headwater streams further limited the scientific literature on these features.

In my opinion, the scientific literature reviewed in the Connectivity Report supports the proposition that all parts of a watershed are connected to some degree and that connectivity occurs along a continuum. The Report leaves to policy makers to establish jurisdictional lines along the connectivity gradient based on many policy and legal considerations. These regulatory determinations would be better informed by a consideration of the technology and quantitative measures necessary to establish connectivity. There are likely ephemeral tributaries and wetlands that are close enough to traditional navigable waters (TNWs) and have sufficient volume and duration of flow to have an effect on those TNWs. What is lacking is the ability to establish a quantitative and objective method to separate them from those which do not have a significant effect.

Significant nexus determinations require more information

The Corps of Engineers which is responsible for implementing the *Rapanos* decision has also had problems in applying the significant nexus test. The EPA and the Corps issued guidance in 2007⁹ to their staff and the public on how to make significant nexus determinations. This Guidance was published as a draft and the EPA and Corps received 66,000 comments. It was released as a final guidance document in 2008. It requires a multiple step process and establishment of specific analyses in order to determine that a significant nexus occurs. There are also multiple reviews required at both the Corps and EPA offices.

Jurisdictional determinations involving a significant nexus analysis are so complicated for Corps staff and so burdensome on landowners that, in 2008, the Corps began to offer a short cut by allowing landowners to opt for a “Preliminary Jurisdictional Determination” (PJD)¹⁰. The purpose of the PJD is to provide a “written indication that there may be waters of the United States, including wetlands, on a parcel” but does not exclude any wetlands or “waters” based on either the *SWANCC* or *Rapanos* Supreme Court decision. The reason given is that it allows landowners an opportunity to “expeditiously to obtain a Corps permit authorization” presumably due to the controversy and difficulty in obtaining an approved jurisdictional determination involving the significant nexus test. Many Corps District informed landowners that PJDs were the preferred method to assure rapid response to their permit applications.

⁹ Environmental Protection Agency and Corps of Engineers. 2007. Jurisdictional Determination Form Instructional Guidebook.

¹⁰ Corps of Engineers Regulatory Guidance Letter 08-02 Jurisdictional Determinations. June 26, 2008.

For those landowners that sought an Approved Jurisdictional Determination that included a significant nexus determination, the extended time for review and the undefined methodology to make that determination led to disputes over the findings. The Corps of Engineers does have an appeal process, but often those appeals result in remands to the District to provide more specific information on their significant nexus determination. Rarely have these significant nexus cases made it to Court, but the 4th Circuit Court of Appeals determined in the *Precon*¹¹ case, that the Corps must provide sufficient evidence in the record to show that there is a downstream effect on a navigable water from the upstream tributary or wetland. Mere citation of literature or general findings are insufficient. Some investigation is required to show a specific effect on downstream navigable waters. Other courts have reached similar decisions¹². Since the Supreme Court decision in *Hawkes* allowing landowners to seek court review of jurisdictional determinations before the permitting process has been completed, we are likely to see more decisions related to the information necessary for a significant nexus determination to be upheld.

The point is that a finding a significant nexus must go beyond a list of citations or general assumptions on the functions of a tributary or wetland. It must include demonstrable evidence that specific actions in the subject “water” will affect downstream waters. The Courts have not gone so far as to require exhaustive site specific studies; however, they have required that information relevant to that particular water system be provided in order to meet Justice Kennedy’s requirements that such evidence be more than speculative or insubstantial.

The Panel recommended that the EPA develop more detailed quantitative and methodology procedures in establishing a significant nexus. However, the WOTUS rule did not make such an effort but rather used a list of nine ecological functions and said that if any one of those functions could be demonstrated to occur with the wetland or in similarly situated wetlands within a watershed, then a significant nexus finding could be made. The functions listed included:

- Sediment trapping;
- Nutrient recycling;
- Pollutant trapping, transforming, and transport;
- Retention and attenuation of flood waters;
- Runoff storage;
- Contribution of flow;
- Export of organic matter;
- Export of food resources;
- Provision of life cycle dependent aquatic habitat (such as foraging, feeding, nesting, breeding, spawning, or use as a nursery area) for species

These functions are extremely broad, sometimes contradictory, and provide little room for any true evaluation of the particular nature of the wetland being evaluated nor the significance of that wetland on downstream TNWs. There was no guidance as to the specificity of the information

¹¹ *Precon Development Corp, Inc v US Army Corps of Engineers*. January 25, 2011.

¹² *Simsbury-Avon Preservation v. Metacon Gun Club*. US District Court, Connecticut. January 31, 2007.

required, how to quantify any of these variables, and what measures would be used to assess how they influenced downstream TNWs. The Panel was never asked to opine on these matters and the final Connectivity Report stated that no scientific consensus on such measures had been reached in the peer-reviewed literature¹³.

Current extent of federal interpretation of significant nexus

When issuing the WOTUS rule, the agencies stated that because all tributaries are jurisdictional “by rule”, “the vast majority of the nation’s water features were located within 4,000 feet of a covered tributary, traditional navigable water, interstate water, or territorial sea.” The Rule’s significant nexus test would apply to these features, either alone or in combination with similarly situated “waters”. Justice Kennedy’s concurring opinion stated that wetlands adjacent to tributaries can “come within the statutory phrase navigable waters, if the wetlands, either alone or in combination with similarly situated lands in the region, significantly affect the chemical, physical, and biological integrity of other covered waters.” Justice Kennedy only discusses wetlands in the context of significant nexus; however, the WOTUS rule expanded this concept to cover streams and tributaries.

The draft Connectivity Report did not discuss the “similarly situated” concept nor was the Panel requested in any of the Charge Questions to evaluate how the existing scientific literature could inform this process. No specific recommendations were provided nor did the Final Connectivity Report contain any specific analysis of how to address Justice Kennedy’s test. The Panel’s comments on the draft Rule were also very cryptic and noted that there can be an effect on downstream waters when “waters” were considered in aggregate; however, no agreement was reached on how that aggregation should be done.

The WOTUS rule defined an extraordinarily large area to be considered as subject to aggregation—stating that it would include all wetlands and waters within a region that drains into the nearest navigable water, intrastate water, or territorial sea. In California, this would include extraordinary large areas encompassing large portions of a single state (e.g. waters draining into the Sacramento River) with variously different wetland types. There is considerable geologic, vegetative, and topographic variation in such large areas that it goes beyond what would be considered as being similar based on scientific principles. The areas subject to aggregation under the 2015 Rule would be far larger than under the 2007 EPA/Corps guidance which uses the immediate watershed surrounding the specific stream reach subject to a significant nexus analysis. Because the WOTUS rule was in effect for such a short period, no significant nexus determinations were made using this expanded standard.

¹³ See Section 2.4.6 of the final Connectivity Report

Nevertheless, the Department of Justice, for the Environmental Protection Agency, has brought enforcement actions based on use of a broad concept of “similarly situated” that was adopted in the WOTUS rule. An example of this expanded view is *US v HVI Cat Canyon* in the US District Court (California)¹⁴. In this matter, the discharges occurred within ephemeral drainages that flow, on average, for only a few days/year following rain events and when they do flow, contribute less than 1% of the flows from the entire watershed to the TNW. The drainages are located over 25 miles from the TNW. Under the 2007 EPA/Corps guidance, the “relevant reach” for the evaluation of the significant nexus is only that portion associated with the first order stream and any wetlands associated with that reach. In the *Cat Canyon* case, the relevant reach and its watershed comprises less than 0.5% of the entire watershed of the Santa Maria River. However, the US is applying the standard of the now stayed WOTUS rule that would have allowed for a combination of all similarly situated waters in the entire Santa Maria watershed in order to make a determination of significant nexus. Under the 2015 Rule’s standard, the US states that the true measure of significance should include 60% of the watershed when all first order streams and their watersheds are combined. The basis for their determination of significance is that, if all these streams were eliminated, there would certainly be a significant nexus on the TNW. No one is proposing such an outcome. The stark difference in how significant nexus is determined under the 2007 EPA/Corps guidance and the WOTUS rule brings to light the necessity of greater scrutiny on the agencies’ significant nexus approach.

¹⁴ US District Court, Central District of California. CV 11-05097 FMO (SSx)

Table 6-2. Relative abundance of literature by review topic area. The table shows the relative size of the body of literature documented in the report that addresses the physical, chemical, or biological connectivity to and effects on downstream waters. A small dot (·) indicates a relatively smaller body of literature, a medium dot (●) indicates a relatively intermediate body of literature, and a large dot (⊙) indicates a relatively large body of literature. The dot size does not necessarily correspond with the number of associated citations in this report because some citations are review articles or meta-analyses, which summarize information from many references. The dot size also does not correspond with level of confidence in particular conclusions.

Topic	Question		Biological		Chemical		Physical	
			Connection	Effect	Connection	Effect	Connection	Effect
Streams	What are the physical, chemical, and biological connections to and effects of ephemeral, intermittent, and perennial streams on downstream waters?	ephemeral	●	·	⊙	●	⊙	●
		intermittent	⊙	●	⊙	●	⊙	●
		perennial	⊙	⊙	⊙	⊙	⊙	⊙
Riparian/ Floodplain Wetlands	What are the physical, chemical, and biological connections to and effects of riparian or floodplain wetlands and open waters (e.g., riverine wetlands, oxbow lakes) on downstream waters?		⊙	⊙	⊙	⊙	⊙	⊙
Non- floodplain wetlands	What are the physical, chemical, and biological connections to and effects of wetlands and open waters in non-floodplain settings (e.g., most prairie potholes, vernal pools) on downstream waters?		●	·	●	·	·	·

From EPA 2015 Connectivity of Streams & Wetlands to Downstream Waters