April 12, 2019

Mr. Andrew R. Wheeler
Acting Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Mr. R.D. James
Assistant Secretary of the Army for Civil Works
U.S. Army Corps of Engineers
441 G Street, N.W.
Washington, D.C. 20314

Via regulations.gov: Docket ID No. EPA-HQ-OW-2018-0149

Re: Scientific Societies Comments on Proposed Rule - Revised Definition of "Waters of the United States" (84 FR 4154; Docket ID No. EPA-HQ-OW-2018-0149)

CC: Michael McDavit, Oceans, Wetlands, and Communities Division, Office of Water, EPA
Jennifer A. Moyer, Regulatory Community of Practice, U.S. Army Corps of Engineers

Dear Administrator Wheeler and Mr. James,

On behalf of the Society of Wetland Scientists and representing 3,000+ wetland and aquatic science professionals, we respectfully submit the following comments in response to your solicitation regarding the proposed Rule "Revised Definition of 'Waters of the United States" (**proposed Rule**) (84 FR 4154; Docket ID No. EPA-HQ-OW-2018-0149), published in the Federal Register on February 14, 2019. The Society of Wetland Scientists (SWS) is an international scientific organization whose members study, manage, and restore wetlands. We are a science-based and non-profit organization with a deep commitment to independent objectivity and peer-review of ecological science, policy and management practices. Our members have numerous areas of expertise in the ecological, hydrological, biogeochemical, ecological restoration and biological sciences. They work in the private sector, academia, and tribal, state and federal agencies and support wetland, aquatic, and ecological resource research, education, restoration and sustainable management, as well as the development and use of the best available science to sustainably manage and restore our freshwater, estuarine, coastal, and ocean resources for the benefit of the U.S. economy, environment, and public health and safety. SWS holds multiple scientific meetings each year focused on wetlands throughout the world and publishes the most important peer-reviewed journal dealing with wetlands (*Wetlands*) in the world.

EXECUTIVE SUMMARY

SWS strongly opposes the proposed Rule and the U.S. Environmental Protection Agency's and the U.S. Army Corps of Engineers' (Agencies) decision to re-write and rescind the science-based definitions contained in the 2015 Clean Water Rule (2015 CWR). By redefining waters of the United States (WOTUS), and related terms, the Agencies have cast aside the "significant nexus" standard from the 2015 CWR, based on Justice Kennedy's opinion in *Rapanos v. United States*, 547 U.S. 715 (2006), in favor of a much narrower standard based on Justice Scalia's opinion in *Rapanos*. The proposed Rule will significantly decrease the number and types of waters the Agencies regulate. Because the proposed Rule, excludes numerous waters and wetlands that directly affect the chemical, physical, and biological integrity of primary waters it will make it impossible to achieve the objectives of the Clean Water Act (CWA).

Although only an additional 5% of wetlands are protected under the 2015 CWR in comparison to pre-2015 protections, the proposed Rule would eliminate protection of more than 50% of our nation's wetlands and more than 18% of the nation's stream miles, reversing decades of protections that currently ensure clean and plentiful water for current and future generations, as well as water-based economies such as fishing, hunting, recreation, and tourism.

The proposed Rule poses a significant threat to the integrity and security of our drinking water (quality and quantity), public health, and to fisheries, shellfish habitat and wildlife habitat. It increases the threat of damage to communities and infrastructure from flooding, severe storm events, and sea level rise, all of which have negative economic impacts on citizens, communities and businesses. For these and the following reasons, SWS strongly supports the 2015 CWR and opposes the proposed Rule.

1) The proposed Rule is not based on sound science and is not consistent with Office of Management and Budget (**OMB**) guidelines (Circular A-4), whereas the 2015 CWR definition of WOTUS is based on the best available peer-reviewed science and conforms to the OMB guidelines.

2) The Clean Water Act's (CWA) primary goal of restoring and maintaining the physical, chemical, and biological integrity of the nation's waters can only be achieved if the definition of WOTUS is grounded in sound science and recognizes all five parameters of connectivity (hydrologic, chemical, physical, biological, ecological), as documented in the U.S. Environmental Protection Agency's (**EPA**'s) 2015 "Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence" report (**Connectivity Report**) (EPA 2015). The proposed Rule only recognizes a limited subset of connectivity, and thereby would fail to properly implement the CWA.

3) The bipartisan national goal of "no net loss of wetlands" is only achievable if the definition of WOTUS is grounded in sound science and incorporates all five parameters of connectivity. The proposed Rule would fail to achieve "no net loss of wetlands" and appears to be crafted to achieve the net loss of wetlands.

4) The Agencies fail to explain how the proposed Rule will contribute to the CWA's primary goal of maintaining and restoring the chemical, physical, and biological integrity of the nation's waters.

5) The proposed Rule is not supported by the economic analysis that the Agencies have put forward, which is, in any event, incomplete and flawed (see comments below).

6) Many of the definitions and terms in the proposed Rule lack clarity and/or are not based in science, and many of the criteria for jurisdiction are not based in science and fail to meet the stated goal of clarity, predictability and consistency, and instead require lengthy and difficult field evaluations (see comments below).

COMMENTS ON THE PROPOSED RULE

This letter and appendices outline some ramifications of the proposed Rule and provide supporting discussion for the points in the Executive Summary with the 31 comments below, a Conclusion section, References and two Appendices.

Comment #1: SWS strongly opposes the proposed Rule and renew our earlier objections (see Appendix A) to the Agencies' proposed rulemakings:[1] any agency action concerning WOTUS must be supported by peer-reviewed science and a valid economic analysis.

Comment #2: We fully support the definition of WOTUS in the 2015 CWR, which was overwhelmingly supported by peer-reviewed science. The EPA's Office of Research and Development prepared a comprehensive scientific report to accompany the 2015 CWR, the "Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence" (herein the "Connectivity Report" but which was described in the 2015 CWR as the "Science Report"). Ecological connectivity refers to the exchange of organisms and matter between different areas on the landscape. The Connectivity Report was based on a review of more than 1,200 peer-reviewed publications and it provided the technical basis for the 2015 CWR. The 2015 CWR also underwent an extensive stakeholder review process. We oppose[2] the proposed Rule because it is unsupported by peer-reviewed science. It has not been developed using the critical scientific analysis that supported the 2015 CWR rulemaking process, and it has

[1] See comments submitted by SWS and other societies on November 20, 2017, regarding the proposed rule, Definition of "Waters of the United States" – pre-proposal Outreach Comments, EPA-HQ-OW-2017-0480, and comments submitted by the undersigned societies on September 21, 2017, regarding the proposed rule, Definition of "Waters of the United States" – recodification of the Pre-existing Rules, EPA-HQ-OW-2017-0203. These comments are in Appendix A.

[2] We incorporate by reference the comments submitted by SWS and other societies on September 21, 2017 and on September 26, 2017, regarding the proposed rule, Definition of "Waters of the United States" – Recodification of Pre-existing Rules, EPA-HQ-OW-2017-02-03 and on November 20, 2017, regarding the proposed rule, Definition of "Waters of the United States" – pre-proposal Outreach Comments, EPA-HQ-OW-2017-0480. These comments are in Appendix A.

not been subjected to a rigorous independent review process. As a result, the proposed Rule is deficient as well as arbitrary and capricious.

Comment #3: We vehemently object[3] to the proposed Rule's definition of WOTUS, which is based on the Agencies' interpretation of Justice Antonin Scalia's plurality opinion in *Rapanos*. The proposed definition would exclude numerous waters and wetlands (including features such as geographically isolated wetlands (including prairie potholes, vernal pools and others enumerated in Comment #26, some non-floodplain wetlands, headwater streams, ephemeral features, and more) from Clean Water Act protection that directly affect the chemical, physical, and biological integrity of primary waters because it recognizes only a limited subset of connectivity. The proposed Rule fails to recognize and incorporate all five parameters of connectivity (hydrologic, chemical, physical, biological, ecological), which were documented in the EPA's Connectivity Report and which must be taken into account to fully and properly implement the Clean Water Act. Should the proposed Rule be implemented, it would be impossible to achieve the Clean Water Act's primary goal "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. 1251(a), and to meet the national goals set by Congress: (1) "that the discharge of pollutants into the navigable waters be eliminated by 1985;" and (2) "that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983…" also cited at 1251(a)(1)-(2). **The agencies should reaffirm the existing 2015 CWR or develop a WOTUS definition and associated revised rule that takes into account all five parameters of connectivity, that achieves the goal of the CWA and the goals set by Congress, and that is as scientifically and ecologically, robust as the 2015 CWR**.

Comment #4: By failing to incorporate all five parameters of connectivity, **the proposed Rule fails to protect the Nation's waters, wetlands, and the important and economically valuable ecosystem services that they provide.** For example, wetlands and headwater streams (regardless of flow duration and location in the watershed) provide essential services to communities, such as protection of drinking water quality and quantity, provision of flood storage, storm damage prevention, resilience against sea level rise and drought, and essential fish, shellfish, waterfowl and wildlife habitat. The economic value of these services is increasing as we face increasing risks from storms, drought, wildfires and rising seas. See prior comment letters in Appendix A for further documentation of the ecosystem services provided by wetlands and waters and their economic values.

Wetlands occupy a small portion of the U.S. landscape yet deliver outsized benefits and economic value to society. To put the importance of non-floodplain wetlands and headwater streams in perspective:

[3] We incorporate by reference the comments submitted by SWS and other societies on November 20, 2017, regarding the proposed rule, Definition of "Waters of the United States" – Pre-proposal Outreach Comments, EPA-HQ-OW-2017-0480. These comments are in Appendix A.

- Headwaters comprise 79% of the total length of rivers in the US, drain more than 70% of land area (Colvin et al 2019), and supply clean water for 1/3 of the US population (US EPA 2009).
- Ephemeral streams may comprise 96% of stream systems (Meyer et al 2003).
- Wetlands located outside of floodplains (including vernal pools, prairie potholes, etc.) occupy 6.59 million hectares (Lane and D'Amico 2016). As a point of comparison, the state of West Virginia occupies 6.27 million hectares.
- On an annual basis, headwater streams provide $15.7 trillion USD and wetlands outside of floodplains/geographically isolated wetlands provide $673 billion USD in ecosystem services for conterminous US and Hawaii (Creed 2017).
- Commercial and recreational fisheries contributed over $208 billion in economic impact and 1.62 million jobs in 2015 (NMFS 2015). Headwaters have both direct and indirect impacts on the health of fisheries.
- Nationally, trout anglers spent $3.5 billion on their pursuits, supported over 100,000 jobs, and had a $10 billion economic impact, including $1.3 billion in federal and state tax revenues in 2006 (USFWS 2014) and 30.1 million freshwater anglers spent $29.9 billion on freshwater fishing trips in 2016 (USFWS 2018).

Comment #5: The proposed Rule does not purport to limit the net loss of wetlands.

Protection of clean water, including healthy wetlands and the ecosystem services that they provide to people, has long been a bipartisan issue. Indeed, in 1988, Vice President George H.W. Bush declared that all existing wetlands, no matter how small, should be preserved (Robertson 2000). As President, he established the national goal of no net loss of wetlands in 1989, which subsequent administrations have also endorsed (Hough & Robertson 2009). **The proposed Rule does not document how it contributes to achieving the long-standing and bipartisan national goal of no net loss of wetlands.** In overturning settled science and decades of regulatory precedent set by the 2015 CWR, pre-2015 regulations and guidance documents, the CWA, and the national goal of "no net loss" of wetlands, **it is incumbent upon the Agencies to provide scientific documentation commensurate to the 1,200+ peer-reviewed studies that informed the Connectivity Report to support any rule revision that they propose.** Indeed, the United States Supreme Court in Motor Vehicles Mfrs. Ass'n of the United States, Inc. v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29 (1983), held that an agency must provide a "reasoned analysis" when rescinding and revising rules

Comment #6: The proposed Rule, which calls for fewer protections for the Nation's waters, cuts against public opinion. Polls have demonstrated wide public concern about the state of the nation's waters and support for their protection. The percentage of Americans who consider pollution levels in rivers, lakes, and streams to be at least somewhat dangerous has exceeded 90%, since data began to be collected in 1993 (Boyle et al. 2017). A 2018 Gallup poll found that 62% of Americans believe that the government is doing too little to protect the environment, the highest percentage since 2006 (Newport 2018). The proposed Rule, which is not grounded in sound science, will not be effective in protecting the nation's waters.

Comment #7: The Agencies do not explain how the proposed Rule will achieve the CWA's primary goal of restoring and maintaining the chemical, physical and biological integrity of the Nation's waters (33 U.S.C**.** § 1251(a))**, and do not provide scientific justification for their proposal to limit jurisdiction to a very narrowly defined version of connectivity, rather than the full chemical, physical and biological connectivity referenced in the CWA and in the EPA's own recent Connectivity Report.**

Comment #8: The proposed Rule improperly ignores best available science.

Science is critical to EPA decision-making and its mandate to protect the environment. Scientific thinking has underpinned all major EPA policy decisions since the agency's inception. As EPA's own Scientific Integrity Policy (2012) states, "Science is the backbone of the EPA's decision-making." In 2018, EPA emphasized: "***The best available science must serve as the foundation of EPA's regulatory actions***." Strengthening Transparency in Regulatory Science, 83 Fed. Reg. 18,768, 18,769 (proposed Apr. 30, 2018) [hereinafter Proposed Transparency Rule] (emphasis added) (quoting Improving Regulation and Regulatory Review, Exec. Order No. 13,563, 76 Fed. Reg. 3821, 3821 (Jan. 21, 2011) ("Our regulatory system must protect public health, welfare, safety, and our environment while promoting economic growth, innovation, competitiveness, and job creation. It must be based on the best available science."). The EPA's "ability to pursue its mission to protect human health and the environment depends upon the integrity of the science on which it relies. The environmental policies, decisions, guidance, and regulations that impact the lives of all Americans every day must be grounded, at a most fundamental level, in sound, high quality science."

Effective implementation of the CWA requires science as its foundation. The CWA's stated objective is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1251(a). The ***only*** way to make sound determinations regarding the restoration and maintenance of waters' "chemical, physical, and biological integrity" is through science because otherwise, no empirical determinations can be made about the integrity of our waters. The U.S. Supreme Court noted that the CWA's "objective incorporated a broad, systemic view of the goal of maintaining and improving water quality: as the House Report on the legislation put it, 'the word "integrity" . . . refers to a condition in which the natural structure and function of ecosystems [are] maintained.'" *United States v. Riverside Bayview Homes, Inc*., 474 U.S. 121, 132 (1985) (citing H.R. Rep. No. 92–911, at 76 (1972)). The ***only*** way to assess "water quality" or the "natural structure" or "function" of "ecosystems" is through science, again, because otherwise, there is no way of empirically assessing water quality or the function of ecosystems.

Every aspect of the CWA's implementation requires the use of science. For example, the Army Corps of Engineers (**Corps**), the agency vested with responsibility to issue CWA Section 404 permits, relies on scientific manuals in making those CWA site determinations. *See, e.g., Tin Cup LLC v. U.S. Army Corps of Eng'rs*, No. 4:16-cv-00016-TMB, 2017 WL 6550635, at *8 (D. Alaska Sept. 26, 2017) (discussing the scientific basis of CWA jurisdictional determinations and noting that the Corps' supplemental manual for Alaska "reflect[s] the benefit of nearly two

decades [of] advancement in wetlands research and science"). The Corps' CWA determinations themselves have been labeled as "scientific decision[s]." *Avoyelles Sportsmen's League, Inc. v. Marsh*, 715 F.2d 897, 906 (5th Cir. 1983). Indeed, the U.S. Supreme Court recently underscored, in a reference to the Clean Water Rule, the Agencies' reliance on science. *U.S. Army Corps of Eng'rs v. Hawkes Co., Inc*., 136 S. Ct. 1807, 1812 n.1 (2016) ("In 2015, the Corps adopted a new rule modifying the definition of the scope of waters covered by the Clean Water Act in light of scientific research and decisions of this Court interpreting the Act.").

The traditional deference that courts afford to EPA and Corps decisions is based on the Agencies' actual use of science. *See Marsh v. Or. Natural Res. Council*, 490 U.S. 360, 377 (1989). Not surprisingly, the Corps' CWA determinations are routinely upheld when based upon rigorous scientific literature or studies. *See, e.g., Sierra Club v. U.S. Army Corps of Eng'rs*, 464 F. Supp. 2d 1171, 1225 (M.D. Fla. 2006) (court upheld Corps' CWA mitigation plan where "scientifically supported"), *aff'd*, 508 F.3d 1332, 1337 (11th Cir. 2007); *Precon Dev. Corp. v. U.S. Army Corps of Eng'rs*, 984 F. Supp. 2d 538, 545, 560, 561–62 (E.D. Va. 2013) (Corps' CWA findings upheld as "sufficient evidence" where they included scientific literature showing that the wetlands "support[ed] the water integrity of the [river] by removing nitrates and phosphorous, storing water, and slowing flow" and had an important "biological and ecological impact" on the river); *Nw. Envtl. Def. Ctr. v. Wood*, 947 F. Supp. 1371, 1384 (D. Or. 1996) (Corps' decision must be upheld so long as it was "carefully considered [and] based on evidence from scientific studies" (internal quotation marks omitted).

Then-EPA Administrator Scott Pruitt himself emphasized the importance of science to EPA rulemaking in a 2018 Bloomberg interview. Pruitt noted the importance of the agency's "leaning in to being very robust in our scientific review, getting the best scientists in the country to work with us and for us in air and water and the rest" and "making sure there is robust analysis in these conclusions that are being drawn by multiple folks across the country . . . across all the rulemaking that we do." *EPA's Pruitt Challenges California on Emission Rules* (Bloomberg Podcast Mar. 14, 2018), https://www.bloomberg.com/news/audio/2018-03-14/epa-s-pruitt challenges-california-on-emissions-rules.

In short, science permeates all aspects of the CWA, and, indeed, must do so for the EPA and Corps to fulfill their mandates. Under the arbitrary and capricious standard, an agency must "examine the relevant data and articulate a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'" *State Farm*, 463 U.S. at 43 (quoting *Burlington Truck Lines, Inc. v. United States*, 371 U.S. 156, 168 (1962)). **The EPA recognizes that "[t]he best available science must serve as the foundation of EPA's regulatory actions," and it cannot ignore the science when proposing to revise the definition of WOTUS.**

Because the proposed Rule ignores its own prior scientific reports, including the Connectivity Report, and other peer reviewed scientific articles, the proposed Rule is not based on the best available science. It therefore does not comply with the EPA Scientific Integrity Policy, the Proposed Transparency Rule, Executive Order No. 13,564 (2011), and the prior Supreme Court and Agency decisions noted above.

Comment #9: The rationale for the proposed Rule revision is not based on sound science, because it is instead based on Justice Scalia's plurality interpretation (see page 4159 of proposed Rule) of, "…the term "waters of the United States" to "include…only those relatively permanent, standing or continuously flowing bodies of water "forming geographic features" that are described in ordinary parlance as "streams[,]…oceans, rivers [and] lakes,"" *Rapanos*, 547 U.S. at 7390 (Scalia, J., plurality) (quoting *Webster's New International Dictionary* 2882 (2nd ed. 1954)), and "wetlands with a continuous surface connection" to a relatively permanent water. Also cited at 742.

Rather than basing jurisdiction on the body of peer-reviewed best available science, which includes the essential concept of ecological connectivity (all five parameters), the Scalia plurality instead turns to a 1954 dictionary definition. The proposed Rule, as a result and by its terms, places greater weight on creating a simplistic and non-scientific definition (which can easily be mis-understood) than on a functional and effective definition which meets the requirements of the CWA. The Agencies state, "To be clear, there is no requirement under today's proposal to prove the existence of, nor the significance of, "ecological interconnection" between an adjacent wetland and navigable waters. If a wetland meets the proposed "adjacent wetland" definition, it would be jurisdictional" (p. 4186 proposed Rule). **The implication here is that if a wetland does not meet the proposed regulatory definition of "adjacent wetlands", then it would not be jurisdictional, even if it is ecologically interconnected with WOTUS. In making this statement, the Agencies propose a rule that contradicts their own Connectivity Report, issued just a few years ago in 2015, as well as settled science, and the CWA itself, and thus the proposed Rule appears to be arbitrary and capricious. Further:**

- **a.** We re-affirm our comments in the November 11, 2017 letter (see **Appendix A**) submitted to the Agencies in response to the Agencies' pre-proposal solicitation of comments on re-defining the definition of the waters of the United States, and incorporate those comments into this letter, because *we do not believe that they have been addressed in the proposed Rule (published in the Federal Register on February 14, 2019).*

- **b.** What is needed in any proposed rule change is for the Agencies to provide a body of peer-reviewed publications, comparable to those supporting the 2015 CWR, that provides scientific evidence that any proposed Rule will:
  - **i.** implement the CWA mandate "to restore and maintain the chemical, physical, and biological integrity of the nation's waters," and provide a peer-reviewed comparison to both the 2015 CWR (now in effect in 22 states, D.C. and U.S. territories) and the pre-2015 regulations and guidance (now in effect in 28 states),
  - **ii.** achieve the national goals set by Congress: (1) "that the discharge of pollutants into the navigable waters be eliminated by 1985;" and (2) "that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983…" Also cited at 1251(a)(1)-(2), and,

iii. will protect the waters of the United States and the ecosystem services (such as economic, social, and public health benefits) that they provide, as effectively as, or more effectively than, the 2015 CWR and pre-2015 regulations and guidance.

The 2015 CWR is supported overwhelmingly by the scientific evidence and documented in the Connectivity Report, which underwent external peer review by the EPA Science Advisory Board and incorporates results from over 1,200 peer-reviewed scientific publications. Further support for the 2015 CWR is provided by a Brief of the *Amici Curiae* in Support of Respondents and in Support of Upholding the Clean Water Rule (CWR *Amici Brief*),[4] filed with the U.S. Court of Appeals for the Sixth Circuit, as well as numerous peer-reviewed studies (e.g., Golden et al. 2017), Agency experience and U.S. Supreme Court precedent.

Key to the Connectivity Report and the CWR *Amici Brief* is the concept of the connectivity of the waters and wetlands of a watershed – what happens to the waters and wetlands in the upper watershed, whether or not the feature is ephemeral, intermittent, perennial, whether or not it is within a floodplain or outside of a floodplain, whether or not it is a headwater or traditional navigable water, is hydrologically, chemically, physically, biologically and ecologically connected to what happens in downstream waters and wetlands. **Therefore, maintaining and restoring the chemical, physical, and biological integrity of downstream traditional navigable waters is not possible without protecting the upper watershed features and recognizing all five of the parameters of connectivity, and the proposed Rule fails to provide this protection by excluding wetlands that do not abut or have a surficial hydrologic connection to a WOTUS in a typical year, and by excluding headwater streams and ephemeral features.** The functioning of the circulatory system in the human body is a useful analogy to illustrate the importance of watershed connectivity. Introduction of toxins, such as cigarette smoke, to the smallest capillaries in the lungs ultimately delivers those toxins to the larger blood vessels and the main organs. The heart itself can ultimately be damaged beyond repair by the cumulative effect of toxins introduced at the peripheries of the circulatory system and the health of the whole organism cannot be preserved without consideration of the smaller features. Watersheds function in a similar way. Pollutants introduced into ephemeral waters and wetlands cumulatively and ultimately make their way to the largest waterways and water bodies with deleterious effects on the functioning of downstream features. **Thus, restoring and maintaining the functional integrity of the Nation's waters is not possible if the peripheral and headwater features are not protected, and the proposed Rule would fail to accomplish this.**

Comment #10: The proposed Rule (see page 4184 of proposed Rule) inappropriately limits jurisdictional connectivity to a subset of two parameters (surficial hydrologic connection and physical connection (i.e., abutting). To be consistent with current scientific understanding of connectivity, all five parameters of connectivity must be taken into account in any WOTUS-related rule, as they are in the 2015 CWR. Aquatic ecosystems

[4] https://www.stetson.edu/law/international/biodiversity/media/amici_curiae_brief_of_wetland_and_water%20_scientists-01-20-17_filed.pdf.

cannot function properly without functional biological and chemical connectivity, as well as physical connectivity, and therefore cannot provide essential ecosystem services without multiparameter connectivity**. The proposed Rule's reliance on flow permanence and physical abutment as measures of jurisdiction arbitrarily ignores other aspects of physical connectivity such as bed, banks, and high-water marks, and chemical, biological and ecological connectivity, whereas the 2015 CWR incorporates these elements.**

The proposed Rule will have the effect of removing protections afforded to headwaters, tributaries, wetlands (including non-floodplain wetlands and geographically isolated wetlands) and non-surficially connected adjacent waters. Each of these changes, in turn, will have **costly and significant negative consequences for American citizens, businesses, communities, and public health. Basing a definition of WOTUS on a 1954 dictionary definition fails the fundamental test of being functional, and promises to leave the citizens, communities and businesses of the United States with diminished ecosystem services** including:

- reduced water quality,
- less dependable water supply,
- increased vulnerability to wildfires,
- reduced flood storage capacity,
- reduced and degraded fish, shellfish and wildlife habitat, thereby undermining the associated industries,
- reduced capacity to prevent storm damages to properties and infrastructure,
- reduced recreational opportunities and the economic benefits accrued to the recreational and tourism industries,
- greater exposure to pollutants in food and water, and
- higher associated costs to taxpayers, insurance companies and insurance rate payers, who will have to absorb the resulting damages and property and health care costs, and fund replacement of these services,
- and negative economic impacts for many businesses and industries.

Compensating for the loss of these ecosystem services will result in significant financial losses, as further discussed below in Comment numbers 30 through 32.

Comment #11: Alternatively**, Justice Kennedy's understanding of the definition of WOTUS comports with peer-reviewed scientific literature and the 2015 CWR appropriately established "significant nexus" as the regulatory standard**. Adjacent wetlands are considered to have a significant nexus (thereby triggering jurisdictional status) if they, "either alone or in combination with similarly situated lands in the region, significantly affect the chemical, physical, and biological integrity of other covered waters more readily understood as 'navigable.'" *Rapanos* at 780 (see page 4160 of proposed Rule). *Justice Kennedy states that "significant nexus" is the "conclusive standard for jurisdiction" based on "a reasonable inference of ecological interconnection" between adjacent wetlands and navigable-in-fact waters that allows for their categorical inclusion as "waters of the United States""* (see page 4167 of proposed Rule). **The proposed Rule should use this definition for jurisdictional standards.**

Comment #12: The proposed Rule purports to consider science, but in fact cherry picks, thereby practicing a form of cafeteria science that references the results of science and the scientific method when convenient while simultaneously disregarding science when inconvenient. Examples are noted in the following three comments.

Comment #13: While stressing the importance of simplicity, and basing the proposed Rule on Justice Scalia's plurality opinion, which is based on a 1954 dictionary definition**, the Agencies simultaneously recommend reliance on sophisticated professional-level and science-based tools** for assessing flow regimes, such as regional regression analysis, hydrologic modeling, USGS topographic data, various modeling tools, drainage area, precipitation data, soils maps, climate, land use, vegetative cover, geology, national hydrography data, etc., **thereby acknowledging the central role that science plays in understanding hydrologic systems in the landscape** (see page 4176 of proposed Rule). **At the same time, it ignores[5] the science of connectivity,** which the Agencies have previously endorsed in the EPA's own Connectivity Report. **The Agencies should base any proposed WOTUS definition on the best available science.**

Comment #14: The Agencies acknowledge the value of retaining the longstanding regulatory term "adjacent", but then proceed to redefine the term, and to limit it's meaning without justification (p. 4187 of the proposed Rule). While citing a 1994 dictionary definition for the word "adjacent", the Agencies note that the common understanding for the term "adjacent" means "next to", "adjoining", "to lie near" or "close to", and state that this meaning is consistent with the Rapanos plurality's "physical-connection requirement," 547 U.S. at 751 n. 13 (see page 4187 of proposed Rule). However, this last statement is disingenuous. The Rapanos plurality physical connection requirement ignores three out of the four synonyms given for "adjacent" (i.e., "next to", "to lie near", and "close to"), and instead adds a requirement that an adjacent feature must "abut" a jurisdictional water, and that "abut" means "to touch at least at one point or side of". **This is a significant re-definition, not only per the dictionary definition that the Agencies rely on, but also in relation to settled science and decades of past regulatory precedent.** The three "adjacency" terms that the proposed Rule ignores are better encompassed by Justice Kennedy's "significant nexus" standard. **We request that the Agencies acknowledge and incorporate both the full meaning of the word "adjacent" into any proposed rule revision, and the science that supports this more complete meaning of the word.**

Comment #15: We also note the lack of consistency in use of dictionaries in the proposed Rule text, despite a stated desire to promote consistency. In one location, a 1954 dictionary is cited, and in another, a 1994 dictionary is cited. Rather than relying on the vagaries of dictionaries,

[5]The Agencies state on page 4188 of the proposed Rule, "…ecological connections between physically separated wetlands and otherwise jurisdictional waters cannot be used to determine adjacency according to this proposal."

which can differ from publisher to publisher and over time, **scientific consensus should be the standard for jurisdictional definitions**.

Comment #16: On page 4177 of the proposed Rule, the Agencies request comments regarding whether the significant nexus standard must be a mandatory component of any future definition of WOTUS, and they note that the significant nexus standard was articulated by a single Justice. **Rather than focusing on the number of Justices who articulate the standard, the standard should be evaluated in comparison to how well it achieves the mandate of the CWA and the objectives of Congress when they established the CWA, as noted above, and the Agencies should document how any proposed rule revision achieves the CWA mandate and objectives, and how it is supported by the results of scientific enterprise.**

Comment #17: On page 4177 of the proposed Rule, the Agencies request comment on whether or not the definition of "tributary" should refer only to perennial waters, and whether there should be a requirement that a tributary originate from a particular source such as groundwater interface, snowpack, or lower stream orders that contribute flow. On page 4178, the Agencies request comment on whether the definition should be changed to focus on "seasonal flow" rather than on intermittent flow. On page 4178, the Agencies request comment on whether or not the definition of "intermittent" should require continuous flow for a specific duration. In the ensuing pages, the Agencies propose other specific suggestions for additional changes to the definition of WOTUS.

With regard to all of these proposed changes, the definition for tributary should be based on the best available science and should contribute to the mandate of the CWA and the objectives that Congress set when they passed the CWA, and the achievement of the bipartisan national goal of "no net loss of wetlands" as discussed above. Thus, "tributary" should not refer only to perennial waters, the source of the tributary should not be restricted, and the focus should not shift to "seasonal flow". The point is that the water flowing in a tributary contributes to the downstream waters, and therefore contributes to the chemical, physical, and biological integrity of those downstream waters, and that this relationship (based on chemical, physical and biological [aka ecological] connectivity) is the justification for regulating the tributary. Eliminating smaller, intermittent, non-floodplain, geographically isolated and/or ephemeral features from protection creates vulnerability for the downstream water in the same way that allowing introduction of toxins to small blood vessels and capillaries, if the toxins are potent enough and in large enough quantities, jeopardizes the health of the large blood vessels, the heart, and in worst cases, the entire body. Additionally, there is wide variability across the United States with regard to how hydrologic systems function and their durations of flow. **Adding a requirement for a specific duration of flow to the definition of "intermittent" would be impractical and would likely fail to achieve the CWA mandate**, given the flow variabilities across the country, **and the Agencies should not add such a requirement to any proposed Rule.**

Comment #18: On page 4186 of the proposed Rule, the Agencies request comment on, "Wetlands that do not abut or have a direct hydrologic surface connection to other waters of the United States in a typical year are not inseparably bound up with the waters of the United States and are more appropriately regulated as land and water resources of the States and Tribes pursuant to their own authorities." Here, the Agencies appear again to be proposing to restrict the definition of "adjacent" to one that requires contact (i.e., converting "adjacent" to "abut" and relying on direct surficial hydrologic connection), while ignoring other forms of ecological connectivity, such as ephemeral hydrological connections and groundwater flows that transfer water, solutes and pollution from one area to another. **The Agencies should provide documentation of the scientific basis for making any substantial change in definition**. The term "inseparably bound up with" is not a scientifically defined term but suggests the concept of functional connection. As documented in the Connectivity Report, wetlands that are neighboring to other waters of the United States but are not necessarily abutting or having a direct hydrologic surface connection in a typical year, often exhibit functional connection with other WOTUS, as recognized by Justice Kennedy's "significant nexus" concept. **The Agencies should withdraw the proposed Rule and implement the 2015 CWR throughout the Nation, since the peer-reviewed scientific literature demonstrates that wetlands that do not touch other WOTUS or have a direct surficial hydrologic connection in a typical year, can be functionally linked to the other WOTUS.**

Comment #19: Further, on page 4187, the Agencies note that their "proposed definition of "adjacent wetlands" would not require surface water exchange between wetlands and the jurisdictional waters they abut to create the jurisdictional link, consistent with case law and for ease of implementation.". Here, they appear to acknowledge that surface water exchange is not required for a functional relationship to exist, but only grant regulatory status to wetlands that "abut" other WOTUS. This is arbitrary and capricious, and inconsistent with settled science and regulatory precedent. The Agencies acknowledge the history of case law that supports functional connection without surface water exchange, yet they exclude adjacent wetlands lacking a direct surficial hydrologic connection in a typical year when those adjacent wetlands do not abut other WOTUS. **The Agencies should revert to the 2015 WOTUS or provide a proposed Rule that is logically consistent with settled science, regulatory precedent, and past case law on this issue.**

Comment #20: The proposed Rule would exacerbate the cultural eutrophication and hypoxia crises in the Gulf of Mexico by removing regulatory protection for geographically isolated wetlands [GIWs]; an action that would also degrade the physical, chemical, and biological integrity of WOTUS, which would violate the mandate of the CWA (Section 101). The Agencies should revert to the 2015 WOTUS or provide a proposed Rule that is logically consistent with settled science, regulatory precedent, and past case law. The "Dead Zone" in the Gulf of Mexico negatively impacts the Louisiana seafood industry which crosses state lines and produced 1.8 billion dollars in sales impacts in 2011 (NMFS 2012). Article I, Section 8, Clause 3 of the United States Constitution states that the United States Congress shall have power "*To regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes.*"

CASE STUDY – The Gulf of Mexico Hypoxia Zone

The consequences of wetland loss are poignantly illustrated by the water quality issues in the Mississippi River watershed. The Mississippi River basin drains approximately 41% of the continental U.S. Five states within this watershed: Iowa, Missouri, Illinois, Indiana, and Ohio have converted more than 95% of their wetlands, primarily for agricultural purposes (EPA 2015). Many of these converted wetlands could have been characterized as "geographically isolated" from navigable waters. Currently, agricultural operations dominate the landscape in this region and nutrient runoff from these areas has been implicated in the formation of the Gulf of Mexico hypoxia or 'dead zone' along the Louisiana coast. **Appendix B** provides a detailed discussion of the Gulf of Mexico Hypoxia Zone.

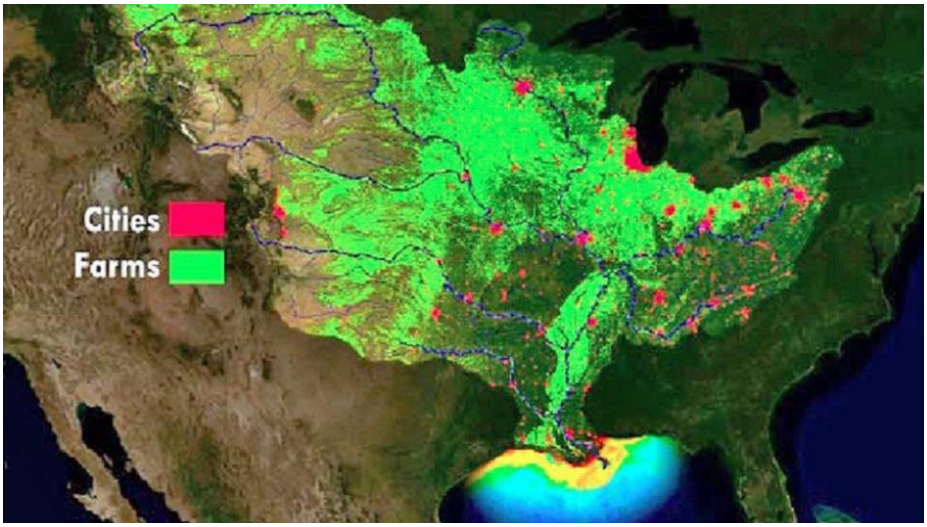

Image: Institute for Global Environmental Strategie


Photo: NOAA

The sources of these high nutrient loads overlap areas of great historic wetland losses and areas of intense agricultural production. Agricultural and urban areas located in states in the upper and lower Mississippi River basins generate significant nutrient loads that cross state lines and produce adverse ecological impacts in the Gulf of Mexico. Ironically, one of the most effective methods to ameliorate this problem is to restore and preserve wetlands in the geographical regions of the nutrient sources.

Comment #21: Commercial activities in some states are negatively impacting commercial interests in other states. The attributes of these impacts are physical, chemical, and biological degradation of the WOTUS that results from deterioration of GIWs. **Therefore, the Commerce Clause should be re-invoked in the CWA to protect GIWs and the Agencies should revert to the 2015 WOTUS or provide a proposed Rule that is logically consistent with settled science, regulatory precedent, and past case law. Further, the Agencies should retain "interstate waters" as a jurisdictional category and should regulate this category as it has been regulated under the 2015 CWR and pre-2015 regulations and guidance** (see pages 4171 – 4172 of proposed Rule). By eliminating the "interstate waters" category under the proposed Rule, the Agencies are effectively reducing the waters that would qualify for protection, as interstate waters would have to meet jurisdictional criteria applied to intrastate waters, rather than being protected by virtue of being interstate waters, as is currently the case.

The loss of millions of hectares of wetlands in the Mississippi River watershed, which represents over 40% of the area of the lower 48 states, has led to major flooding in recent years, and a hypoxic zone in the Gulf of Mexico that is extremely large. The flooding and water quality damages caused by loss of wetlands in some states has negative impacts in other states to the commerce and businesses where the flooding and water quality damages occur. **Past such unfortunate and costly events were completely avoidable and will worsen under the proposed Rule.**

Comment #22: The Agencies should explain how the proposed Rule would contribute to preventing other such catastrophes and damages.

Comment #23: **The Agencies' failure to use the scientific record is inconsistent with the obligations imposed by the National Environmental Policy Act (NEPA).**

While CWA Section 511 exempts the EPA from having to perform an environmental impact statement, other NEPA requirements still apply. In particular, NEPA requires the Agencies to "study, develop, and describe alternatives" to the proposed Rule. 42 U.S.C. § 4332(E) (2018). In *Municipality of Anchorage v. United States*, the U.S. Court of Appeals for the Ninth Circuit observed the EPA should not be completely exempted from NEPA because "it cannot be assumed that EPA will always be the good guy." 980 F.2d 1320 (9th Cir. 1992) (internal quotations omitted). Courts have excused formal compliance with NEPA when the EPA's actions are the functional equivalent of NEPA's requirements. **Here, however, the Agencies have wholly failed and abdicated their responsibilities to study the environmental impact of reducing Clean Water Act jurisdiction. Before the Agencies proceed with the proposed Rule, they must—as required by NEPA and the APA—study the likely impacts and provide a reasoned analysis on how this contributes to the CWA's objectives**

Comment #24: Any assumption that states will fill the gaps created by the proposed Rule is unsupported by history and current experience. Since 1977, states have had the authority to assume the CWA Section 404 program, but only two (Michigan and New Jersey) have done so (ASWM & ECOS 2011). **Financial constraints play a significant role in states declining to accept this responsibility. Furthermore, many states have provisions in their state laws that prohibit state agencies from regulating more stringently than the CWA regulates (ELI 2013).** While state legislatures may amend their laws to broaden state protections, in practice such efforts take time. California's experience is instructive: it took a decade to develop a state response to restricted federal jurisdiction after *Rapanos* (Wittenberg 2019). If the proposed Rule went into effect, states would not be able to respond in a timely manner.

Comment #25: The proposed removal of non-floodplain and/or GIWs from protection under the proposed Rule would eliminate Federal protection of these wetlands as well as their source, sink, refuge, lag, and transformation functions and affect the physical, chemical, and biological integrity of downstream waters (Tiner 2003, EPA 2015). Tiner (2003) listed 10 categories with 29 examples of GIWs that could be negatively impacted: **1)** midcontinental prairie and steppe basin wetlands (prairie potholes, playas, Rainwater Basin wetlands, and Sandhills wetlands), **2)** semi-desert and desert basin and flat wetlands (salt lakes, salt flats, channeled scablands, and desert springs), **3)** kettle-hole wetlands, **4)** Atlantic-Gulf Coastal Plain basin wetlands (Delmarva potholes, Carolina bays, pocosins, and coastal prairie potholes), **5)** karst basin wetlands (cypress domes and limestone sinkholes), **6)** vernal pool wetlands (West Coast vernal pools and woodland vernal pools), **7)** coastal zone interdunal and intradunal wetlands, **8)** Great Lakes alvar wetlands, **9)** inactive floodplain wetlands (oxbow

lakes), and **10)** other potentially isolated wetlands (bogs, fens, gum ponds, slope seepage wetlands, and permafrost wetlands). The destruction of GIWs results in the loss of ecosystem functions that have effects on downstream waters, which have been documented by EPA (2015). Some examples are below:

The biological integrity and biodiversity support services of downgradient ecosystems can be affected by destruction of GIWs. The conversion of Carolina bays, Delmarva potholes, and vernal pools to other land uses such as logging, agriculture, and urban development eliminates refuge and breeding habitat for vertebrate and invertebrate species, including rare, threatened, and endangered species (EPA 2015). Impoundments and water diversions in the arid western U.S. eliminate desert spring wetlands, which are habitat for several species of endangered pupfishes (*Cyprinodon* spp.) (Tiner 2003). The loss of prairie potholes reduces nesting habitat for the North American population of waterfowl. The Rainwater Basin and Sandhills wetlands are wetlands of international importance to wildlife because they function as spring staging areas, breeding areas, and migration and wintering habitat for endangered species (Elliot 1991, Gersib 1992). Wetland loss increases concentrations of migratory birds into smaller areas and increases the risk of outbreaks of infectious diseases (EPA 2015).

GIWs affect the biogeochemistry of adjacent ecosystems by acting as sinks for sediment, nutrients, pesticides, and metals. They are buffer zones that can intercept polluted waters, affect nutrient delivery, and mitigate water quality (EPA 2015). Agricultural conversion of pocosins has lowered salinity in adjacent estuaries and increased peak flow rates, turbidity, and the concentration of ammonium, nitrate, and phosphate in streams and estuaries (Sharitz and Gresham 1998). Channelization and draining of kettle-hole wetlands, prairie potholes, Carolina bays, Delmarva potholes, and playa lakes can provide conveyances for nutrients, sediment, and pesticides into downstream systems (Tiner 2003). Furthermore, downstream water quality would be affected by the elimination of the aerobic-anaerobic soil interfaces, where biogeochemical processes transform and degrade nutrients and pesticides (Reddy and Delaune 2008). **GIWs are also sources of dissolved organic carbon and their removal from the landscape would result in the loss of material and energy fluxes to downstream waters and ecosystems that would affect stream primary productivity and food web dynamics (EPA 2015)**.

The absence of the lag function due to wetland loss would affect the physical attributes of downstream waters by the reductions in water storage, flood reduction, and attenuation of peak flows. Playa lakes and prairie potholes store water during droughts and recharge aquifers such as the Ogallala Aquifer, which crosses state lines and contributes to the baseflow of many downgradient perennial streams (EPA 2015). Levees and impoundments isolate oxbow lakes from the river system, which leads to desiccation and loss of wetland functions.

The proposed removal of these non-floodplain and/or GIWs from protection under the proposed Rule would eliminate Federal protection of these wetlands which would degrade the physical, chemical, and biological integrity of WOTUS, in violation of the mandate of the CWA. Therefore, the Agencies should revert to the 2015 WOTUS or provide a proposed Rule that is logically consistent with settled science, regulatory precedent, and past case law.

Comment #26: The proposed Rule should acknowledge the connectivity and significance of non-floodplain, geographically isolated, headwater and/or ephemeral waters and wetlands, and base jurisdiction on whether or not a feature has "significant nexus" (i.e., connectivity based on all five ecological parameters, as documented in the Connectivity Report and in accordance with the CWA).

Comment #27: In making the argument that simplicity should supersede function and the achievement of the stated objectives of Congress, the Justice Scalia plurality joins early Americans who opposed ratification of the U.S. Constitution. In 1787, these opponents of ratification argued that the language of the Constitution was, "…difficult to read, and that its difficulty was further evidence that it was part of a conspiracy against the understanding of a plain man…" (Lepore, 2018). Just as it would have ill-served the country then to fall for such a specious argument, **so too will it ill-serve the country now to choose another specious simplicity over a functional and science-based WOTUS definition that supports the achievement of the legal mandate of the CWA through the restoration and maintenance of the physical, chemical and biological integrity of the nation's waters**.

The proposed Rule will not provide certainty to average landowners and the proposed Rule's regulatory structure and language (definitions, concepts and criteria) often lack clarity, simplicity, predictability and consistency. Given these issues, the proposed Rule appears to be an attempt to eliminate Federal oversight of national resources rather than to increase clarity in the regulatory landscape.

While stressing the importance of clarity, simplicity, predictability and consistency, the Agencies fail to achieve these goals. As discussed earlier in this comment letter, simplicity, while a laudable goal, is only of service when it is supported by the best available science and is consistent with regulatory and case law precedent. In many instances, the proposed Rule, in its attempt to simplify, fails to achieve the mandate of the CWA, associated goals set by Congress when they enacted the CWA, and the national "no net loss" of wetlands goal, and in some instances appears to create more complexity, unpredictability and lack of clarity than existing regulations.

a. As noted on page 4176 of the proposed Rule, Agencies recommend reliance on sophisticated professional-level and science-based tools for determining jurisdictional status of tributaries, such as assessing flow regimes by using regional regression analysis, hydrologic modeling, USGS topographic data, various modeling tools, drainage area, precipitation data, soils maps, climate, land use, vegetative cover, geology, national hydrography data, etc., thereby indicating their awareness of the complexity inherent in many determinations, and the need for the use of professional-level science-based tools**.** However, since the proposed Rule is fundamentally based on concepts that are unsupported by science, the use of scientific tools is for naught. **In contrast, the 2015 CWR relies on both a simpler and more scientifically sound approach for determining jurisdiction of tributaries, drawn from the best available**

science: field observation of stream banks, bed and ordinary high-water marks to determine tributary jurisdiction. As such, the Agencies' claim that the proposed Rule creates clarity, simplicity, predictability and consistency is not supported by the proposed Rule itself.

b. On page 4187 of the proposed Rule, the Agencies state that, "This categorical inclusion, however, does not alleviate the need for site-specific verification of jurisdiction, such as confirmation of wetland characteristics, whether the wetlands abut another jurisdictional water and other issues typically addressed during a jurisdictional determination process." Here they again appear to acknowledge the complexity of many wetland determinations, and the necessity for professional-level, science-based wetland evaluations during a permitting process. **We reiterate that any proposed Rule should be science-based and note that any science-based Rule will have complexities. In fact, the simplest policy is to broaden protection, and err on the side of greater protection of waters and wetlands to ensure effective achievement of the CWA mandate. Instead, the proposed Rule does the opposite, it seeks to reduce protection of waters and wetlands under the guise of simplicity.**

c. Due to the lack of peer-reviewed science supporting the proposed Rule, and the breaks with settled science, regulatory precedent, the intent and language of the CWA, and past case law, the proposed Rule is likely to be challenged in court, adding further uncertainty and complexity for landowners, citizens, and other stakeholders.

Comment #28: The Agencies should provide documentation to support their statement (page 4176, proposed Rule) that they expect that, "…landowners will have also sufficient knowledge to understand how water moves throughout their properties.", particularly given the acknowledgments that the Agencies have made that professional-level science and science-based tools are necessary for implementation of the proposed Rule.

Comment #29: Economic analysis: The Agencies estimated the avoided costs and forgone benefits of adopting the proposed Rule in a foundation document produced by the EPA and the Department of the Army (EPA/DOA 2018). This 2018 study is the economic justification for a positive cost-benefit analysis of the proposed Rule: Its production and distribution is a requirement of Executive Orders 13563 and 12866 to provide information to the public. A 2015 economic analysis (EPA/DOA 2015) is the equivalent document supporting the 2015 CWR (DOA/EPA), which is proposed to be revised with this Rule.

<u>Benefit:Cost Analysis</u>

The 2018 economic benefit:cost analysis is fatally flawed for the purpose of informing the public of the actual economic costs, and its flawed nature detracts from other benefit:cost analyses generated by Federal Agencies (Boyle et al. 2017). A grand entry point to understand why is illustrated in the contrasting results from the Boyle et al. 2017 and EPA/DOA 2018

analyses compared to in the 2015 analysis, despite using the same data. Why? **One reason is that <u>the EPA/DOA 2018 analysis does not consider environmental benefits – at all</u>. The 2015 EPA document on connectivity (p ES5; EPA 2015) says that "when considering the effect of an individual stream or wetland, all contributions and functions of that stream or wetland should be evaluated cumulatively." (p. ES5; EPA 2015). This guidance is ignored in the 2018 economic analysis and clearly stated as being ignored within that analysis.**

General statements (qualitative) suggesting this conclusion precede the actual numbers generated, and undercut their economic conclusions:

> p. 100: "The likely response of states to definitional changes is uncertain. Past environmental policies and current state regulations offer some indication of potential policy responses, but actual responses may differ from the Agencies' projections in this analysis. Differing state responses makes quantifying impacts to potential newly non-jurisdictional waters difficult."
>
> p. 101: "Due to these limitations and confounders, the methodology used in this analysis only provides a description of the potential effects of the proposed rule on the 404 permitting program."

***Specific* statements (quantitative) say these environmental costs are ignored. Specifically, the 2018 economic analysis says that the environmental costs are unknown in summary tables listing the net estimates of costs** (p. 102: Figure IV-2. Potential effects of the proposed Rule on CWA Section 404 program; p. 109: Figure IV-3: Potential effects of the proposed Rule on CWA Section 311 SPCC program; p. 115: Figure IV-4: Potential effects of the proposed Rule on CWA Section 311 FRP program; p. 118: Potential effects of the proposed Rule on CWA Section 311 oil spill response and removals, funding sources, and other requirements). The possibilities for multiple impacts are listed on p. 133, **but none are valued** (Figure IV-9: Overview of potential environmental impacts to selected CWA programs from proposed changes in CWA jurisdiction for certain waters).

These are not trivial omissions. The report states that multiple impacts from a rule change may be significant (p. 134: "The proposed changes to CWA jurisdiction could have a wide range of impacts on the ecosystem services provided by aquatic resources, including decline in wildlife habitat quantity and quality, downstream inundation damages, greater drinking water treatment and dredging costs, greater spill response cost and damages."), **but does not estimate these impacts**. Further, the consequences of indirect changes for other impacts are acknowledged and may be underestimated (e.g., p. 197; "For waters that are no longer jurisdictional, the incentive to prevent or limit impacts would no longer be present. As such, impacts to existing wetlands and streams may be larger than indicated by the impacts for permitted projects, thereby understating the impacts of the proposed rule.").

The benefit:cost analysis is, therefore, contrary to OMB guidelines (Circular A-4) which require that the evidence used is meritorious. The Circular provides guidance that: analysis must be "based on the best reasonably obtainable scientific, technical, and economic information available"; Agencies should "rely on peer-reviewed literature, where available"; studies used

should be “transparent” and “reproducible”; and “analytical consistency in estimating benefits and costs” is paramount.

The OMB guidelines were not followed in the 2018 report when it arbitrarily removed data because it was generated in 1986-2000. The reanalysis labels wetland benefits as “not quantified” and assigns a zero value. Boyle et al. (2017), all of whom are economists, concluded: “no defensible or consistent basis provided by the agencies for the decision to exclude what amounts to the largest category of benefits”, and, “the age of studies alone is not a defensible criterion for excluding categories of economic benefits.” Boyle et al. (2017) also note that “the logic of excluding wetland-related benefits is inconsistent with empirical evidence, saying that public attitudes towards environmental protection “has been very stable, averaging 89% since 1986.” **Any proposed Rule should comply with OMB guidelines identified in Circular A-4.**

Comment #30: Other costs in the proposed Rule are overstated. Schwartz and Shrader (2017), for example, discuss how the costs of compliance with 404 permits are declining due to the expansion of wetland mitigation banks. **They conclude that “the evidence shows that the Clean Water Rule is likely even more cost effective than the 2015 analysis suggests. The benefits of wetland protection are quantifiable, positive, and growing over time while the costs of wetland mitigation will likely fall in the future.”**

Comment #31: <u>Damage to restoration economy is ignored.</u> The restoration economy is sensitive to conditions determined by Federal and State law, which is primarily influenced by the CWA. The domestic restoration economy in the United States directly employs about 126,000 people and generates about $9 billion annually in direct sales, equivalent to about 220,000 people and $24 billion in direct and indirect activity. The 126,000 jobs in the restoration economy compares to the 224,000 workers in coal mining, lumber and steel production, 175,000 in motor vehicle manufacturing, and 205,000 in oil and gas extraction. The restoration economy supports as many as 33 jobs per $1 million invested (range 6.8 - 39.7) which is higher than oil and gas (5.2), school (19) and gas pipeline construction (22). Fifty-nine percent of the activity is in the Census categories of Architectural, Engineering, and Related Services (5413) and Support Activities for Crop Production (1151) (BenDor et al. 2015).

CONCLUSION

Representing diverse areas of expertise in the sciences of ecology, hydrology, biology, biogeochemistry, and ecological restoration and more than 3,000 members**, SWS strongly opposes the proposed Rule and rejects its definition of WOTUS and any WOTUS definition based on Justice Antonin Scalia’s plurality opinion in Rapanos v. United States, 547 U.dS. 715 (2006).**

SWS stresses that any proposed change to the Clean Water Rule, which is grounded in sound science, must also be grounded in sound science. The proposed Rule does not meet this standard. Through an evaluation of the best available science (including the Connectivity Report), **we conclude that the proposed Rule poses a significant threat to the integrity and security of**

our drinking water (quality and quantity), public health, and to fisheries, and wildlife habitat. It increases the threat of damage to communities and infrastructure from flooding, severe storm events, and sea level rise, all of which have negative economic impacts on citizens, communities and businesses. The proposed redefinition of WOTUS will make it impossible to achieve the objectives of the CWA because it excludes numerous waters and wetlands that directly affect the chemical, physical, and biological integrity of primary waters. Furthermore, many of the definitions and terms in the proposed Rule lack clarity and/or are not based in science. Likewise, many of the criteria for jurisdiction are not based in science and fail to meet the stated goal of clarity, predictability and consistency.

In contrast, **SWS strongly supports the 2015 Clean Water Rule**. Effective implementation of the CWA requires science as its foundation. Key to the science-based Connectivity Report and the CWR *Amici Brief* is the concept of the connectivity of the waters and wetlands in a watershed; **what happens to the waters and wetlands in the upper reaches of a watershed, including ephemeral, intermittent, or perennial streams, will impact downstream waters and wetlands; that is, they are hydrologically, chemically, physically, biologically and ecologically connected to what happens downstream**. The 2015 Clean Water Rule reflects this scientific understanding.

The proposed Rule does not address the strong and long-standing bipartisan support for protection of the Nation's waters, including wetlands and the ecosystem services they provide. Wetlands occupy a small portion of the landscape yet deliver large benefits and economic value to society, however t**he proposed Rule does not address the long-standing national goal of no net loss of wetlands established in 1989 by President George H.W. Bush**. Any proposed Rule should provide this documentation.

Finally, we strongly object to the EPA/DOA 2018 economic benefit:cost analysis, with its omissions of the impacts of the proposed Rule. **These omissions are not trivial.** This EPA/DOA 2018 report states that the impacts from a rule change may be significant and could include impacts to ecosystem services such as a decline in wildlife habitat quantity and quality, increased flood risks, the need for greater drinking water treatment, and greater response costs and damages due to spills. **The proposed Rule does not provide an estimate of the cost of these impacts. It also does not consider any environmental benefits of the cumulative contributions and functions of streams and wetlands stating, for instance, that wetland benefits are "not quantified" and assigning them a value of zero. This is directly at odds with the empirical, scientific evidence, which shows that the economic value of wetland ecosystem services is increasing as we face increasing risks from storms, drought, wildfires and rising seas. The EPA/DOA 2018 economic benefit:cost analysis also ignores damage to the restoration economy** that employs about 126,000 people in the United States, generating about $9 billion annually in direct sales (equivalent to about 220,000 people and $24 billion in direct and indirect activity).

We conclude that under this proposed Rule, the CWA's primary goal of maintaining and restoring the chemical, physical, and biological integrity of downstream traditional

navigable waters is not possible and state in the strongest possible terms that the proposed Rule should be rejected, and the Agencies should implement the 2015 CWR nationwide.

Thank you for considering these comments. If you have further questions, please do not hesitate to contact John Lowenthal by email at John.Lowenthal@cardno-gs.com or telephone at (757) 594-1465.

Sincerely,

Max Finlayson, PhD
President-Elect
Society of Wetland Scientists

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APPENDIX A – PRIOR SUBMITTED COMMENT LETTERS

See attachment.

APPENDIX B – GULF OF MEXICO HYPOXIA ZONE CASE STUDY

The consequences of wetland loss are poignantly illustrated by the water quality issues in the Mississippi River watershed. The Mississippi River basin drains approximately 41% of the continental U.S. Five states within this watershed: Iowa, Missouri, Illinois, Indiana, and Ohio have converted more than 95% of their wetlands, primarily for agricultural purposes (EPA 2015). Many of these converted wetlands could have been characterized as “geographically isolated” from navigable waters. Currently, agricultural operations dominate the landscape in this

region and nutrient runoff from these areas has been implicated in the formation of the Gulf of Mexico hypoxia or 'dead zone' along the Louisiana coast.

The Mississippi and Atchafalaya Rivers discharge nutrient-rich freshwater into the Gulf of Mexico. During the period from April to October, seasonal stratification of the water column in the Gulf forms a pycnocline in which a lens of oxygen-rich freshwater overlies saltwater with greater density (Justić et al. 1997). As a result, primary productivity in the euphotic zone increases and dead and senescent algae, zooplankton fecal pellets, and marine aggregates contribute a significant flux of organic detritus to the lower water column and seabed (Rabalais 2009). Decomposition consumes oxygen during the decay of the carbon and depletes the oxygen in the lower water column at a faster rate than the diffusion of oxygen from surface waters to bottom waters (Rabalais 2009). As a result, hypoxic or anoxic conditions form (< 2 mg L^{-1} O_2). Mobile organisms can escape this 'dead zone', but sessile, benthic, and less mobile organisms may perish.

The United States Geological Survey (USGS) SPARROW model can map nutrient yields, loads, and sources for a state, large river basin, or the entire Mississippi River watershed. The Mississippi River/Gulf of Mexico Nutrient Task Force (2017) reported:

"At the basin scale, agricultural inputs (i.e., manure, fertilizer, and legume crops) were the largest total nitrogen source (60 percent of the total), with farm fertilizers contributing 41 percent of that amount. Agricultural inputs (manure and fertilizers) were also the largest total phosphorus source: 49 percent of the total, with 27 percent from chemical fertilizers and 22 percent from manure (Page 25)*...The dominant source of nitrogen and phosphorous loads to local waters and the Gulf is cultivated land in the Mississippi Basin; however, the contribution from cultivated land varies by regional watershed (Fig 11 & 12). Furthermore, the watersheds that contributed the highest nutrient loads according to the SWAT-CEAP model are the Upper Mississippi, Lower Mississippi and Ohio basins (Fig. 11 & 12)* (Page 27)*."*

The sources of these high nutrient loads overlap areas of great historic wetland losses and areas of intense agricultural production. Agricultural and urban areas located in states in the upper and lower Mississippi River basins generate significant nutrient loads that cross state lines and produce adverse ecological impacts in the Gulf of Mexico. Ironically, one of the most effective methods to ameliorate this problem is to restore and preserve wetlands in the geographical regions of the nutrient sources. Instead, the 2018 WOTUS Rule would exacerbate the cultural eutrophication and hypoxia crises by removing regulatory protection for GIWs; an action that would also degrade the physical, chemical, and biological integrity of waters of the U.S., which would violate the mandate of the CWA (Section 101).

The 'Dead Zone' in the Gulf of Mexico negatively impacts the Louisiana seafood industry, which produced 1.8 billion dollars in sales impacts in 2011 (NMFS 2012). Hypoxia increases the relative price of large brown shrimp (*Farfantepenaeus aztecus*) compared with small shrimp because of the displacement of the species to the edges of the zone, which makes them easier to catch during the early season when they are smaller (Smith et al. 2016). Article I, Section 8, Clause 3 of the United States Constitution states that the United States Congress shall have power "*To regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes.*" Thus, commercial activities in some states are negatively impacting commercial interests in other states. The attributes of these impacts are physical, chemical, and biological

degradation of the waters of the U.S. Therefore, the Commerce Clause should be re-invoked in the CWA to protect GIWs**.** Further, the Agencies should retain "interstate waters" as a jurisdictional category and should regulate this category as it has been regulated under the 2015 CWR and pre-2015 regulations and guidance (see pages 4171 – 4172 of proposed Rule). By eliminating the "interstate waters" category under the proposed Rule, the Agencies are effectively reducing the waters that would qualify for protection, as interstate waters would have to meet jurisdictional criteria applied to intrastate waters, rather than being protected by virtue of being interstate waters, as is currently the case.