Attorneys General of New York, California, Connecticut, Maine, Maryland, Massachusetts, Michigan, New Jersey, New Mexico, Oregon, Rhode Island, Vermont, Virginia, Washington, and the District of Columbia

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By Electronic Transmission

Andrew Wheeler, Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue NW
Washington, D.C. 20460

R.D. James
Assistant Secretary of the Army for Civil Works
108 Army Pentagon
Washington, D.C. 20310-0108

Attention: Docket ID No. EPA-HQ-OW-2018-0149
Revised Definition of "Waters of the United States"

Dear Administrator Wheeler and Assistant Secretary James:

The Attorneys General of New York, California, Connecticut, Maine, Maryland, Massachusetts, Michigan, New Jersey, New Mexico, Oregon, Rhode Island, Vermont, Virginia, Washington, and the District of Columbia (the States) write to comment on the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (Corps) (collectively, "the Agencies") proposal to revise the current regulatory definition of "waters of the United States." *See* 84 Fed. Reg. 4154 (Feb. 14, 2019) (the "proposed replacement rule" or "proposed rule"). The States are strongly opposed to the Agencies' proposed rule, which would replace the Clean Water Rule (80 Fed. Reg. 37,054 (June 29, 2015)).[1]

[1] In addition to the reasons stated herein why the proposed rule is contrary to law, the States further note that the Agencies have violated the Administrative Procedure Act, 5 U.S.C. § 551 *et seq*. (the "APA"), by allowing only 60 days for public comment in their Notice, thereby denying the public a meaningful opportunity to participate in this rulemaking. The Agencies allowed the public more than 200 days to submit comments and other input on the 2015 Clean Water Rule that the proposed rule would replace, illustrating the insufficiency of the 60 day period provided here for such an important and complex topic. *See Prometheus Radio Project v. FCC,* 652 F.3d 431, 450, 453 (3d Cir. 2011) (a meaningful opportunity to comment under the APA "means enough time with enough information to comment" in light of the complexity of the proposed agency rule.)

The proposed replacement rule is contrary to the Clean Water Act, 33 U.S.C. § 1251 *et seq.* (the "Act") and controlling case law, and if it becomes final would violate the Administrative Procedure Act. In the proposed replacement rule, the Agencies have failed to apply the correct legal standard for protected waters under the Act. The proposed rule's adverse effect on water quality is contrary to the Act's objective "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. §1251(a). In the proposed rule, without a reasoned basis, the Agencies have abandoned both the governing "significant nexus" test for defining waters subject to the Act's jurisdiction and their prior scientific findings under that test. They have arbitrarily and capriciously reduced protections for tributaries, adjacent waters, wetlands and other important water resources that significantly affect downstream waters.

Further, the Agencies have failed to provide a rational basis for the proposed rule, and instead have asserted a purported federalism rationale, with an emphasis on non-regulatory programs at the expense of water pollution control, and purported constitutional concerns, that all misconstrue the Act and applicable law. In addition, the proposed rule's exclusion of interstate waters from the Act's protections is contrary to the Act and controlling precedent. And contrary to the Agencies' assertions, the proposed rule would not ensure clarity and predictability but instead would create regulatory uncertainty. The Agencies also have employed a flawed economic analysis that violates applicable standards and grossly underestimates the benefits that will be lost if the proposed rule were to become law.

The Clean Water Act has resulted in dramatic improvements to water quality in the United States, yet its overriding objective has not yet been obtained. Many of the Nation's waters remain polluted. Congress required the Agencies to administer a comprehensive, ongoing program that continuously advances the Act's fundamental purpose. In the proposed replacement rule the Agencies have abdicated their required duties under the Act. The proposed rule would do great harm to the progress that the Agencies and the States have already made to improve water quality.

The proposed replacement rule violates the Administrative Procedure Act because it is inconsistent with the Clean Water Act, fails to consider important issues, lacks factual and legal support, and ignores the Agencies' previous findings and conclusions without a reasoned basis. Accordingly, replacement of the 2015 Clean Water Rule with the proposed rule would be arbitrary and capricious and not in accordance with law. We respectfully request that the Agencies proceed no further with the proposed rule.

BACKGROUND

A. The States' Interests

The undersigned Attorneys General serve fourteen states and the District of Columbia. Nearly all of the States are situated along the shores of the Atlantic and Pacific Oceans, Chesapeake Bay and its tributaries, the Great Lakes or Lake Champlain, and are downstream from or otherwise hydrologically connected with many of the Nation's waters. As such, the States are recipients of water pollution and water-mediated materials generated not only within their borders but also from sources outside their borders over which they lack jurisdiction. And States including California and New Mexico rely--for drinking water, wildlife habitat, agriculture, and recreation--on ephemeral waterways that are precipitation-dependent and would be altogether excluded from federal protections in the proposed rule. The States support a protective, clear, practical, and science-based definition of "waters of the United States" under the Act in order to maintain a strong federal foundation for water pollution control and water quality protection that preserves the integrity of their waters.

The Act is the primary mechanism for establishing a federal floor for maintaining water quality and for protecting downstream states from the effects of out-of-state pollution. A protective, science-based definition of the Act's scope is essential for the States to avoid having to impose disproportionate limits on their in-state pollution sources to offset upstream pollution discharges that might otherwise go unregulated. A restricted, unclear, or difficult-to-administer definition of the waters protected by the Act would not only make water quality protection harder for the States, but would put them and their residents and businesses at an economic disadvantage in competition with states in other regions.

The proposed rule would create a gaping hole in water pollution control, presenting the States with very difficult choices. States would be forced either to fill the large gap in water protections that the proposal creates by bearing the administrative burdens of expanding their own water programs, or avoid those costs and suffer the significant harms associated with degradation of their water resources. Not only does the definition of "waters of the United States" implicate the water quality and economic interests of the States and their citizens, it also affects the States' proprietary interests. The proposal's inadequate and ineffective federal protection of waters would likely cause injury to the States' lands, roads, bridges, and other facilities they own or operate.

Attachment A addresses in greater detail the proposed rule's adverse impacts on many of the undersigned States.

B. The Clean Water Rule

The Clean Water Rule was promulgated in 2015 in response to widespread and longstanding concerns about the lack of clarity and consistency in the definition of "waters of the United States" under regulations dating back to the 1980s. Indeed, as the Agencies previously made clear, "[m]embers of Congress, developers, farmers, state and local governments, environmental organizations, energy companies" and others sought new regulations to replace the 1980s regulations to "mak[e] protection of clean water more effective, and improve[e] predictability and consistency" as to the scope of the waters protected by the Act. 80 Fed. Reg. at 37,056-57. The application of the 1980s regulations by the Agencies under their prior guidance documents resulted in many complex case-by-case Clean Water Act jurisdictional determinations throughout the country, and led to confusing and inconsistent interpretations by the Agencies and the federal courts as to which waters are "waters of the United States," and therefore within the Act's protections, and which are not.

To remedy the difficulties with the nearly four-decades-old regulations, the Clean Water Rule defined "waters of the United States" under the Act based on "the goals, objectives and policies of the statute, the Supreme Court case law, the relevant and available science, and the agencies' technical expertise and experience" to establish clear categories of waters within the Act's jurisdiction and thereby reduce the need for case-specific jurisdictional determinations. 80 Fed. Reg. at 37,056. The Clean Water Rule adopted Justice Kennedy's "significant-nexus" test in *Rapanos v. United States*, 547 U.S. 715 (2006) ("*Rapanos*"), to establish these categories. The agencies relied on a large peer-reviewed scientific record to define jurisdictional waters to include those waters that have a "significant nexus" with the integrity of navigable-in-fact waters. *See* 80 Fed. Reg. at 37,057. In doing so, the Clean Water Rule clarified the definition to cover waters with significant effects on the integrity of downstream waters and to exclude others lacking such effects.

C. The Repeal Rule and the Suspension Rule

On July 27, 2017, the Agencies proposed a regulation to rescind the Clean Water Rule and replace it with the preexisting 1980s regulations. 82 Fed. Reg. 34, 899 (the "Repeal Rule"). Subsequently, the Agencies issued a Supplemental Notice of Proposed Rulemaking concerning the Repeal Rule 83 Fed. Reg. 32,227 (July 12, 2018). After an extended comment period during which the States and others submitted comments explaining their strong opposition to the Repeal Rule, to date the Agencies have taken no further action on that proposal.

On February 6, 2018, the Agencies published a rule adding an "applicability date" to the Clean Water Rule two years into the future and reinstating the 1980s regulations during that two-year period. 83 Fed. Reg. 5200 (the "Suspension Rule"). After the States and others challenged the Suspension Rule in multiple federal

district courts, two courts found the rule to be illegal and vacated and/or enjoined it nationwide. The Agencies have decided not to appeal those rulings. *See State of New York, et al. v. Pruitt*, 1:18-cv-1030-JPO, Dkt.121, filed March 3, 2019 (U.S. District Court, S.D.N.Y.)

D. The Proposed Replacement Rule

The proposed replacement rule removes protections under the Act for an extensive but unquantified number of waters previously protected both by the Clean Water Rule and the preexisting 1980s regulations. As explained more fully below, the proposed rule reduces waters covered under the Act, limiting protections for tributaries to those that contribute perennial or certain levels of intermittent flow to a traditional navigable water or territorial sea in a "typical year," and excluding ephemeral streams from protection regardless of their significant effects on downstream waters. *See* 84 Fed. Reg. at 4155, 4204.

The proposed replacement rule restricts the definition for protected "adjacent wetlands" to those that "abut"--meaning "to touch at least one point or side"--"or have a direct hydrological surface connection to" another jurisdictional water "in a typical year". *Id.* at 4155, 4204. The proposal also removes the Act's protections for interstate waters, *id.* at 4171-72, and eliminates protections for waters previously determined on a case-by-case basis to have a significant nexus to traditional navigable waters. *See id.* at 4160-61, 4169. As discussed in detail below, none of the proposed rule's exclusions of protected waters are grounded in law or supported by a reasoned explanation or rational basis.

THE PROPOSED REPLACEMENT RULE, IF FINALIZED, IS ARBITRARY, CAPRICIOUS AND CONTRARY TO LAW.

A rule is unlawful and must be set aside when agencies act "in excess of statutory jurisdiction, authority [and] short of statutory right," "without observance of procedure required by law," and in a manner that is "arbitrary, capricious [and] not in accordance with law." 5 U.S.C. §§ 706(2)(A), (C), (D). Agency rulemaking must be "based on a consideration of the relevant factors." *Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto.*, 463 U.S. 29, 43 (1983) (*State Farm*). 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 (internal quotation and citation omitted).

A regulation is arbitrary and capricious "if the agency relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise." *Id.* An agency may not promulgate a regulation under the Act "without supportable facts," *NRDC v. EPA*,

966 F.2d 1292, 1305 (9th Cir. 1992), and cannot "ignore the directive given to it by Congress in the Clean Water Act, which is to protect water quality," *Nat'l Cotton Council of Am. v. EPA*, 553 F.3d 927, 939 (6th Cir. 2009).

Additional strictures apply where, as here, an agency proposes to take regulatory action to repeal a rule and replace it in connection with a new administration's different policy choices.

> Where there is a policy change, the record may be much more developed because the agency based its prior policy on factual findings. In that instance, *an agency's decision to change course may be arbitrary and capricious if the agency ignores or countermands its earlier factual findings without reasoned explanation* for doing so. *An agency cannot simply disregard contrary or inconvenient factual determinations that it made in the past*, any more than it can ignore inconvenient facts when it writes on a blank slate.

FCC v. Fox TV Stations, Inc., 556 U.S. 502, 537 (2009) (Kennedy, J., concurring) (emphasis added); *see id.*, 556 U.S. at 515 (Scalia, J., for the plurality) (A more detailed justification is needed for an agency's new policy "than what would suffice for a new policy created on a blank slate . . . when its new policy rests upon factual findings that contradict those which underlay its prior policy.").

Here the Agencies have breached fundamental precepts of administrative law, and the proposed replacement rule, if promulgated, would be arbitrary, capricious and not in accordance with law. Specifically, the Agencies: (1) failed to apply the correct legal standard for protecting "waters of the United States" under the Act; (2) disregarded their prior factual findings without a reasoned basis, and advanced a proposal that will cause significant harm to water quality; (3) fundamentally misconstrued the Act and applicable law; and (4) failed to provide a reasoned explanation for the proposed replacement rule. These deficiencies are discussed in detail below.

I. The Proposed Replacement Rule Fails to Apply the Correct Legal Standard for Protected Waters Under the Act.

A. Any Definition of Protected Waters Under the Act Must Include All Waters that Significantly Affect Water Quality in Traditional Navigable Waters.

The sole objective of the Clean Water Act is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. §1251(a). Thus, the touchstone for a rule defining the scope of waters protected by the Act is its effect on water quality. The Agencies may not ignore Congress's

directive in the Act to "protect water quality." *Nat'l Cotton Council v. EPA*, 553 F.3d at 939.

In *Rapanos*, a majority of the Court agreed that water quality is the determining factor in defining the jurisdictional reach of the Clean Water Act. The Court split, with a four-Justice plurality adopting a non-water-quality-based definition of "waters of the United States," and with Justice Kennedy (in a concurring opinion) and four dissenting Justices adopting a water quality based definition. The plurality opinion focused on continuity of flow and physical contiguity. It found that wetlands adjacent to non-navigable tributaries are subject to jurisdiction under the Act only if the tributaries were "relatively permanent" waters that connected to traditional navigable waters, and the wetlands had a "continuous surface connection" to the tributary, thus "making it difficult to determine where the water ends and the wetland begins." *Rapanos*, 547 U.S. at 742.

In contrast, Justice Kennedy's concurring opinion in *Rapanos* focused on water quality. In Justice Kennedy's opinion, adjacent wetlands would fall within the scope of the Act, if, either alone or in combination with "similarly situated lands in the region," they had a "significant nexus" to traditional navigable waters. *Id.* at 779-80 (Kennedy, J., concurring). Wetlands possess the required significant nexus if they "significantly affect the chemical, physical, and biological integrity of other covered waters more readily understood as 'navigable.'" *Id.* at 780. In contrast to the plurality, Justice Kennedy recognized that adjacent wetlands need not have a direct hydrologic surface water connection to a jurisdictional water because "the absence of hydrologic connection (in the sense of interchange of waters)" can "show the wetlands' significance for the aquatic system" and thereby satisfy the "significant nexus" standard. *Id.* at 786. That is because a non-contiguous wetland can retain floodwaters and filter out pollutants, thereby protecting and enhancing water quality in downstream waters.

Like Justice Kennedy's concurrence, the dissent focused on the importance of adjacent wetlands for water quality. Justice Stevens, in an opinion joined by all four dissenting Justices, explained that the Act extends to waters that "serve important water quality roles" for downstream, navigable waters. *Rapanos*, 547 U.S. at 796 (Stevens, J., dissenting). The dissent deferred to the Army Corps' expert conclusion that wetlands adjacent to tributaries of navigable waters "play important roles in maintaining the quality of their adjacent waters, and consequently in the waters downstream" and that such waters are "integral to the 'chemical, physical, and biological integrity of the Nation's waters.'" *Id.* at 796 (quoting 33 U.S.C. § 1251(a)). In essence, the dissent found that adjacent wetlands as a category satisfied the significant nexus test and therefore there was no need for a remand, while Justice Kennedy concurred with the plurality in voting to remand the case so the Army

Corps could apply the significant nexus standard to the facts of that case. *Id*. at 797, 810.

Since *Rapanos*, the Agencies have consistently included significant nexus analyses in making jurisdictional determination under the Act. The Agencies themselves have acknowledged that "[t]he [Clean Water] Rule's use of the significant nexus standard is consistent with every circuit decision . . ." Agencies' Br. at 49 (Jan. 13, 2017) in *In re Dep't of Defense & EPA Clean Water Rule,* No. 15-3751 (and consolidated cases) (6th Cir.) (Dkt. No. 149-1). In fact, every court that has considered the issue has held that if a wetland or other water satisfies the significant nexus test, then it is a "water of the United States." Thus, the federal courts are in unanimous agreement that any water, either alone or when considered with similarly situated waters that can affect water quality in traditional navigable waters, must receive the Act's protection.[2]

B. The Proposed Replacement Rule Is Inconsistent with the Significant Nexus Standard.

The Agencies claim that they used Supreme Court precedent as "*guideposts*" for their interpretation of "waters of the United States." 84 Fed. Reg. at 4159 (emphasis added). However, the proposed replacement rule was neither derived from nor consistent with the significant nexus standard in Justice Kennedy's concurring opinion in *Rapanos* and subsequent case law. The proposed rule is a dramatic departure from the Agencies' longstanding practice going back to the 1986 regulations, and from guidance issued by them in 2007 and 2008 to employ significant nexus review in making jurisdictional determinations. The 2008 guidance is still used today by the Agencies in the 28 states in which the Clean Water Rule has been preliminarily enjoined. And the proposed rule is a radical departure from the Clean Water Rule, now implemented in 22 states, which itself employed a significant nexus analysis and was based on a robust scientific record.

The Agencies' proposed replacement rule abandons their practice dating back to 1986 of protecting adjacent wetlands beyond those that are "abutting" tributaries. As the Agencies acknowledge, their longstanding regulatory practice protected "adjacent" wetlands "bordering, contiguous, or *neighboring*" tributaries. 84 Fed. Reg. at 4160 (emphasis added). And in implementing the 1986 regulations using their 2008 guidance, the Agencies conducted significant nexus evaluations for non-abutting adjacent wetlands, and protected many of them as a result of those

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[2] Some courts have followed the recommendation of the dissent in *Rapanos,* holding that if a water satisfies either the significant nexus test or the plurality's relatively permanent waters test, then it qualifies as a protected water, on the theory that in either case it would command the support of five justices. *Id*. at 810 (Stevens, J., dissenting). That view also ensures the inclusion of all waters that have a significant impact on navigable waters, but allows for the inclusion of some waters that may not have such an impact.

evaluations. *Economic Analysis for the Proposed Revised Definition of "Waters of the United States* (EPA and Army Corps of Engineers Dec. 14, 2018) ("EA") at 4-5.[3]

The 2015 Clean Water Rule applied the significant nexus standard to clarify those protections and add greater certainty to jurisdiction under the Act. The Agencies' comprehensive significant nexus analysis employed the best available science to define "adjacent waters" to include wetlands in close physical proximity to primary waters, *i.e.*, that are "bordering" or "contiguous," and wetlands "neighboring" primary waters in riparian areas and floodplains. But the proposed replacement rule contradicts over thirty years of agency past practice concerning adjacent wetlands by protecting only wetlands that abut, or have a direct hydrological surface connection with, a jurisdictional water in a "typical year." 84 Fed. Reg. at 4203-04. Like the proposed rule's other reductions in the scope of protected waters, the Agencies' about face concerning adjacent wetlands was not the product of any re-analysis of those waters' significant nexus to navigable waters.

Indeed, the concept of limiting protections to abutting wetlands was vigorously criticized by Justice Kennedy in *Rapanos*. In addressing adjacent wetlands, Justice Kennedy made clear that they need not lie literally next to tributaries, because in some cases it is the wetlands' geographic separation from them "that makes protection of wetlands critical to the statutory scheme," allowing them to store "floodwater, impurities, or runoff," thereby preventing harmful discharges to downstream waters. *Rapanos*, 547 U.S. at 775. Accordingly, "it may well be the absence of hydrologic connection (in the sense of interchange of waters) that shows the wetlands' significance for the aquatic system." *Id.* at 786.

The proposed replacement rule's reduced protections for tributaries similarly disregards, without reasoned justification, the significant nexus standard and the Agencies' past practice. The 2008 guidance provided protection for relatively permanent non-navigable tributaries of traditional navigable waters, defined as waters that typically flow year-round or have continuous flow at least seasonally (*e.g.*, typically three months). EA at 11.

In the Clean Water Rule, the Agencies determined that tributaries contributing flow to traditional navigable waters have a significant nexus to such waters, provided they have an ordinary high water mark (OHWM) and physical indicators of a bed and bank, 33 C.F.R. § 328.3(a)(5), which taken together demonstrate "volume, frequency and duration of flow," 80 Fed. Reg. 37,115. Protected tributaries under the Clean Water Rule include ephemeral and intermittent flowing channels because the Agencies found that such waterbodies play an important role in the transport of water, sediments, organic matter,

[3] *See* https://www.epa.gov/sites/production/files/2018-12/documents/wotusproposedrule_ea_final_2018-12-14.pdf

pollutants, nutrients, and organisms to downstream environments. *See* 80 Fed.Reg. at 37,062-63.

In contrast, the proposed replacement rule excludes ephemeral streams and certain intermittent streams from the Act's protections. 84 Fed. Reg. at 4204. Intermittent channels that do not "contribute perennial or intermittent flow" to a traditional navigable water lose protection under the proposed rule. *Id.* Although the Agencies stated that their definition of tributary "incorporates the important aspects of Justice Kennedy's opinion, together with the plurality," *id*. at 4175, as discussed below, the Agencies did not support their proposal with a significant nexus analysis or provide scientific evidence countering their prior scientific findings regarding the significant nexus of tributaries to navigable waters.

II. The Proposed Replacement Rule is Arbitrary and Capricious Because It Disregards the Agencies' Recent Scientific Findings Without Reasoned Basis, and Harms Water Quality in Violation of the Act.

A. The Proposed Replacement Rule Disregards the Agencies' Past Scientific Findings.

When an agency has based its prior policy on factual findings, its "decision to change course may be arbitrary and capricious if the agency ignores or countermands its earlier factual findings without reasoned explanation for doing so." *Fox TV Stations, Inc*., 556 U.S. at 537 (2009) (Kennedy, J., concurring). "An agency cannot simply disregard contrary or inconvenient factual determinations that it made in the past, any more than it can ignore inconvenient facts when it writes on a blank slate." *Id.* In the proposed replacement rule, the Agencies have ignored and disregarded voluminous "inconvenient factual determinations," made by them and grounded in science, that support the Clean Water Rule. Accordingly, promulgation of the proposed rule would be arbitrary and capricious.

In order to implement a statute focused on "the chemical, physical and biological integrity of the Nation's waters," 33 U.S.C. § 1251(a), the Agencies grounded the Clean Water Rule in a vast scientific record detailing how downstream waters are physically, chemically and biologically connected to different kinds of streams, wetlands, and open waters in floodplains, riparian areas, and other areas. According to this record, the quality and health of downstream waters are significantly dependent upon upstream waters through myriad functional connections that transcend political boundaries.

The Agencies made detailed factual findings supporting the Clean Water Rule in a comprehensive report prepared by EPA's Office of Research and Development, entitled "Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence" (Science Report or SR),

and review of the report by EPA's Science Advisory Board (SAB Review). *See* 80 Fed. Reg. at 37,057. The Science Report itself is based on a review of more than 1200 peer-reviewed publications. The Science Report's "purpose [was] to summarize current scientific understanding about the connectivity and mechanisms by which streams and wetlands, singly or in the aggregate, affect the physical, chemical, and biological integrity of downstream waters." SR Executive Summary-1. The Science Report and SAB Review concluded that tributary streams, and wetlands and open waters in floodplains and riparian areas, are connected to and strongly affect the chemical, physical, and biological integrity of downstream traditional navigable waters, interstate waters, and the territorial seas. 80 Fed. Reg. at 37,057.

The Agencies examined "similarly situated" waters in a "region" that "significantly affect" the "chemical, physical and biological integrity" of other covered waters, in accordance with *Rapanos*, 547 U.S. at 780. They determined that "waters are 'similarly situated' when they function alike and are sufficiently close to function together in affecting downstream waters." *See* U.S. EPA, Technical Support Document for the Clean Water Rule: Definition of Waters of the United States 164 (May 27, 2015) (2015 TSD).[4] This is consistent with the scientific consensus that waters in particular landscapes are functionally connected and produce combined effects on downstream water quality. 2015 TSD at 164-171. The Agencies' determined that the "region" for best evaluating whether there is a significant nexus is "the watershed that drains to the nearest traditional navigable water, interstate water or territorial sea." 2015 TSD at 175. The Agencies' decision to utilize the "point of entry watershed" as the geographic region for assessing downstream water quality impacts is consistent with decades of scientific literature, and with the Agencies' longstanding approach for addressing water resources management issues, including water quality and quantity. 2015 TSD at 174-177.

In their analysis supporting the Clean Water Rule, the Agencies evaluated a water's significance by assessing its effects on the chemical, physical or biological integrity of other covered waters. Whether or not a water has a significant effect on downstream water quality was evaluated considering the "functions by which streams, wetlands, and open waters influence the timing, quantity, and quality of resources available to downstream waters." SR Executive Summary-6; *see* 2015 TSD at 103. The Science Report identified five categories of functions that these waters serve: as a "source" of water and food; a "sink" removing contaminants; a "refuge" protecting organisms; allowing "transformation" of nutrients and chemical contaminants; and creating a "lag" or delayed release of storm water and other materials. SR Executive Summary-6. The Agencies used these categories to identify the specific aquatic functions that can significantly affect the chemical, physical or biological integrity of a primary water. 2015 TSD at 177-78. This

[4] Available at https://archive.epa.gov/epa/cleanwaterrule/technical-support-document-clean-water-rule-definition-waters-united-states.html (last accessed April 12, 2019).

functional framework for analysis is firmly grounded in accepted science and agency expertise. 2015 TSD at 178-89; 80 Fed. Reg. at 37,067-68. By using this science-based framework, the Agencies identified categories of waters requiring protection under the Act because of their significant nexus to downstream navigable waters.

In stark contrast, the Agencies in the proposed replacement rule pay scant attention to their previous Science Report or its comprehensive, peer-reviewed synthesis of current scientific understanding. They offer no new scientific evidence contradicting their previous findings underlying the Clean Water Rule that tributaries and adjacent wetlands have a significant nexus to water quality in downstream waters.

In fact, the Agencies acknowledge that in their review of the Agencies' Science Report, the SAB found "strong scientific support for the conclusion that ephemeral, intermittent, and perennial streams exert a strong influence on the character and functioning of downstream waters and that tributary streams are connected to downstream waters." 84 Fed. Reg. at 4175-76. And the Agencies do not countermand the SAB's central finding regarding tributaries, that "the review and synthesis of the literature describing connectivity of streams to downstream waters [in the Science Report] reflects the pertinent literature and is well grounded in current science."[5]

The Agencies' one attempt to criticize the scientific findings regarding tributaries focuses on a single, unremarkable observation in the SAB Review that the connections between waters occur on a "gradient." *Id.* at 4176. But the SAB was merely suggesting that the various dimensions of connectivity be "arrayed as a gradient" in figures because this "would be useful for summarizing the effects of such connections in semi-quantitative terms."[6] And in this context the SAB specifically noted "that relatively low levels of connectivity can be meaningful in terms of impacts on the chemical, physical, and biological integrity of downstream waters."[7]

The Agencies point to nothing in the SAB Review suggesting that inclusion of tributaries as defined in the Clean Water Rule lacks sufficient scientific support. In issuing the Clean Water Rule, the Agencies found that requirements for a tributary to have a bed and bank and OHWM "demonstrate volume, frequency and duration of flow," and in the Agencies' experience are accurate indicators of active water channels. 2015 TSD at 235-43. The "presence of physical channels," which are in fact bed and bank structures, "is a compelling line of evidence for surface water

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[5] Letter to Gina McCarthy, October 17, 2014. SAB Review of the Draft EPB Report Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence, pp. 2-3.
[6] *Id.* p. 65.
[7] *Id.*, p.2.

connections from tributaries." SR Executive Summary-15. In the proposed replacement rule, the Agencies offer no evidence to rebut those findings.

And the Agencies offer no scientific evidence to support the proposed replacement rule's new definition of tributaries that excludes ephemeral streams and certain intermittent streams. The Agencies simply ignore their prior finding that the "onset of flows in ephemeral and intermittent stream channels, particularly those following long dry periods and initiated by floods (i.e., first flushes), are important in transporting and transforming large amounts of unique materials for long distances downstream, which then can have significant [water quality] effects." Science Report, p. 3-23. The Agencies have also said nothing about how the proposed rule's definition of tributaries squares with their prior findings, supported by peer-reviewed science, that even distant headwaters significantly affect downstream rivers, either by dispersing and/or storing water through infiltration of channel bed and banks, thereby minimizing downstream flooding, or by contributing flow. 2015 TSD at 246-47.[8]

The Agencies purport to invoke science in support of their narrowed definition of wetlands protected under the Act, which includes only those wetlands abutting jurisdictional waters or having a direct surface water connection with them. 84 Fed. Reg. at 4187. They assert that the definition is "informed by, though not dictated by science" because the Science Report states that "spatial proximity is one important determinant of the magnitude, frequency and duration of connections between wetlands and streams. . . . As the distance between a wetland and a flowing water system increases, these connections becomes less obvious." *Id.*

But the Science Report and SAB Review concluded that a wetland need not abut a jurisdictional water or have a direct surface water connection to it for the wetland to have a significant nexus to the jurisdictional water; even a relatively long distance between them does not sever a significant connection. Relying on the scientific analysis supporting the Clean Water Rule, the Agencies previously found that wetlands in riparian areas and floodplains are connected to and strongly affect the chemical, physical, and biological integrity of downstream traditional navigable waters, interstate waters, and the territorial seas. 80 Fed. Reg. at 37,057. And they also found that riparian and floodplain wetlands have a significant nexus to downstream waters even though they contain upland areas and therefore can be

[8] *See* Alexander, R.B., E.W. Boyer, R.A. Smith, G.E. Schwarz, and R.B. Moore. 2007. *The role of headwater streams in downstream water quality*. 43 Journal of American Water Resources Association, at 41-59 (2007) (rivers and other "higher-order" streams receive over half of their mean-annual water volume from "first-order" headwater streams).

geographically isolated (i.e., completely surrounded by upland) from flowing water. Science Report, p. 4-5.[9]

The Agencies also found that non-floodplain wetlands significantly affect stream flow in downstream waters by, among other things, providing water storage and acting as sinks and transformers for various pollutants, especially nutrients. Science Report, p.6-6. As explained in the Science Report, "[m]any non-floodplain wetlands interact with ground water, which can travel *long distances* and affect downstream waters or "can be hydrologically connected directly to river networks through natural or constructed channels, non-channelized surface flows, or subsurface flows, the latter of which can travel *long distances* to affect downstream waters." Science Report, pp. 4-2, 6-7 (emphasis added).[10]

The Agencies offer no scientific evidence that contradicts their previous findings favoring a broader definition of protected wetlands, and offer no evidence to support the proposed rule's less inclusive definition. The Agencies' failure to justify scientifically their rollback of the Act's scope of protections is arbitrary and capricious and contrary to the Act and relevant case law.

B. The Proposed Replacement Rule's Reduced Protections for Tributaries, Adjacent Waters (Including Wetlands), and Other Waters Harm Water Quality.

1. Reduced Protections for Tributaries Harm Downstream Waters.

Replacement of the Clean Water Rule's protections for tributaries, *see* 33 C.F.R. §§ 328.3(a)(5),(c)(3), with the proposed rule will negatively affect downstream waters. The Clean Water Rule satisfies the significant nexus standard because it rationally applies science to help determine which waters, including tributaries, should come within the Act's protections. As previously recognized by the Agencies, because streams function together in a watershed, and the effects of individual

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[9] Accordingly, the Clean Water Rule covers such wetlands whether or not they are abutting or have the direct surface water connection with a jurisdictional water as required for coverage under the headwater streams in downstream water quality. *See* 33 C.F.R. §§ 328.2(a)(6), (c)(1), (c)(2)(i)(i) (adjacent waters includes wetlands within 100 feet of ordinary high water mark of a covered water); (c)(2(ii) (adjacent waters includes wetlands within the 100-year floodplain of a covered water but not more than 1500 feet from the ordinary high water mark of the covered water).

[10] Accordingly, the Clean Water Rule covers non-floodplain wetlands if they are determined to have a significant nexus with downstream jurisdictional waters. See, e.g., 33 C.F.R. §§ 328.3(a)(7) (prairie potholes, Carolina bays and Delmarva bays, pocosins, western vernal pools, Texas coastal prairie wetlands); 328.3(a)(8) (waters located within 4,000 feet of the high tideline or OHWM of a primary water).

streams are cumulative, they must be evaluated in combination with other streams in a watershed. 2015 TSD at 245; SR Executive Summary-5, 13. Downstream waters are nothing less than the integrated result of their tributaries, which require protection to achieve the Act's objective. *Id.*

The proposed replacement rule's narrowed definition of tributaries, which excludes all but natural surface water channels contributing "perennial or intermittent flow," would cause many integral waters to lose protection and will have significant detrimental impacts on water quality. 84 Fed. Reg. at 4173, 4204. The proposed rule eliminates from the Act's protections all ephemeral streams, described by the Agencies as those "surface water[s] flowing or pooling only in direct response to precipitation," 84 Fed. Reg. at 4173. By the Agencies' own admission, at least 18 percent of all streams across the country are ephemeral and would no longer be jurisdictional waters under the proposed rule.[11] This percentage is significantly higher in the arid West, where 35% of all streams, and 39% of stream length, are ephemeral.[12]

The Clean Water Rule's protection of intermittent and ephemeral streams in the arid Southwest is consistent with sound science.[13] As recognized by the Agencies, "these streams nonetheless perform the same important ecological and hydrological functions documented in the scientific literature as perennial streams, through the movement of water, nutrients and sediment to downstream waters." 2015 TSD 259, 265-267. Notably, 94% of total stream length in Arizona is intermittent and ephemeral.[14] Although such flow can be over short time periods, "these episodic connections . . . provide a large portion of the mass, momentum, energy, and organisms delivered annually to the downstream waters." *Id.* In addition, the proposed replacement rule eliminates protections for those perennial and intermittent streams that do not reach a navigable water but rather contribute flow to downstream waters through "ephemeral feature[s] . . . [thereby] sever[ing] jurisdiction for such perennial and intermittent streams." 84 Fed. Reg. at 4174. For example, mountain headwater streams, although integral to hydrologic systems in arid regions[15], would lose protection under the proposed rule.

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[11] USACE Internal Communication, September 4-5, 2017. "Breakdown of Flow Regimes in NHD [National Hydrography Dataset] Streams Nationwide".

[12] *Id.*

[13] Levick, L., J. et al. 2008. The Ecological and Hydrological Significance of Ephemeral and Intermittent Streams in the Arid and Semi-arid American Southwest. U.S. Environmental Protection Agency and USDA/ARS Southwest Watershed Research Center, EPA/600/R-08/134, ARS/233046, 116 pp.

[14] Nadeau, T.L., and M.C. Rains, Hydrological connectivity between headwater streams and downstream waters: How science can inform policy. 43 Journal of the American Water Resources Association at 118-133 (2007).

[15] Izbicki, J.A. 2007. Physical and temporal isolation of mountain headwater streams in the western Mojave Desert, southern California. Journal of the American Water Resources Association, Vol. 43, No. 1.

The reduction in protections for tributaries means that significant downstream water quality benefits would be lost under the proposed rule. In 2015, the Agencies found that protection of tributaries with both "intermittent" and "ephemeral" flow is supported by strong science documenting the many important functions these waters perform. "The great majority of tributaries are headwater streams, and whether they are perennial, intermittent, or ephemeral, they play an important role in the transport of water, sediments, organic matter, pollutants, nutrients, and organisms to downstream environments." 2015 TSD at 233. In fact, peer-reviewed studies relied upon in the Science Report demonstrate that intermittent and ephemeral streams comprise approximately 59% of total stream length in the United States, and the Agencies have estimated this percentage to be even higher.[16] Accordingly, by eliminating coverage for many headwater streams, their important benefits for downstream water quality will be lost, and water quality will suffer, contrary to the Act's stated objective.

Tributaries perform a multitude of functions that benefit downstream waters. They trap and store sediment, thereby reducing harmful over-sedimentation effects on downstream waters. 2015 TSD at 247-48. Tributaries also help buffer temperatures in river networks, often affecting downstream water temperature many kilometers away. 2015 TSD at 248-49. Tributaries, including small shallow tributaries and headwater streams, have important impacts on the chemical integrity of downstream waters. 2015 TSD at 249-54. Organic carbon is altered chemically within tributary streams and then exported downstream to support biological activity. 2015 TSD at 249. Excess nutrients, such as nitrogen and phosphorus from surface runoff, are stored and transformed in tributaries, having a large positive effect on downstream water quality by preventing reduced dissolved oxygen levels, eutrophication[17] and turbidity. 2015 TSD at 249-52. Similarly, tributaries serve as a sink for other contaminants such as metals, thereby reducing pollutants that would otherwise reach downstream waters. 2015 TSD at 252.

Tributaries also have significant effects on the biological integrity of downstream waters, including the moving downstream of living organisms and their reproductive eggs or seeds. 2015 TSD at 254. Upstream-originating food sources like plankton, vegetation, and invertebrates also are transported downstream to be consumed by other animals. 2015 TSD at 254-56. Headwater tributaries, in particular, provide important habitat to many aquatic organisms and are used by salmon and other anadromous fish for spawning. *Id.* Under the proposed replacement rule, downstream waters would lose many of these benefits because so many tributaries would now be excluded from the Act's protections.

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[16] USACE Internal Communication, September 4-5, 2017. "Breakdown of Flow Regimes in NHD [National Hydrography Dataset] Streams Nationwide."

[17] Eutrophication is the state that results from the presence of excess nutrients, which depletes oxygen in the water. *See* 2015 TSD at 211.

And the proposed replacement rule's "typical year" requirement will exacerbate losses in downstream benefits. The proposed rule would cover only those perennial and intermittent streams that contribute flow in a "typical year," which means within the normal range of precipitation over a rolling thirty-year period for a particular geographic area. 84 Fed. Reg. at 4204. This requirement excludes "times of drought or extreme flooding," *id*. at 4173, ignoring that critical functions many waters provide actually occur during such times. Further, such a requirement fails to incorporate basic warnings from climate science that past climate conditions cannot be used to predict current and future ones, and that the frequency of extreme precipitation events in some geographic areas and the frequency of extreme drought in others will increase.[18] By looking backward only in calculating average precipitation over the past 30 years, the "typical year" requirement arbitrarily ignores consideration of future precipitation patterns, which may change the status (ephemeral, intermittent, or perennial) of streams in the future.[19]

2. Reduced Protections for Adjacent Waters (Including Wetlands) Harm Downstream Waters.

The proposed replacement rule's elimination of Clean Water Rule protections for adjacent waters, including wetlands in proximity to tributaries, 33 C.F.R. §§ 328.3(a)(6), (c)(1)(2) and (4), would negatively affect downstream waters. As the Agencies have long recognized, "wetlands can perform critical functions related to the integrity of other waters – functions such as pollutant trapping, flood control, and runoff storage," Rapanos, 547 at 779 (Kennedy, J., concurring). Indeed, the Agencies' own documents reveal that adopting the proposed rule would strip existing federal protection from as much as *51 percent* of wetlands across the country.[20].

The Agencies' extensive record for the Clean Water Rule demonstrates the critical importance of defining adjacent waters to include more than just waters that directly touch, i.e. "abut or have a direct hydrological surface connection" to other protected waters. 84 Fed. Reg. at 4155. As discussed earlier, Justice Kennedy found that it "may well be the absence of hydrologic connection (in the sense of interchange of waters) that shows the wetlands' significance for the aquatic

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[18] USGCRP, 2018: Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, D.C.

[19] Dhungel, S. *et al.* (2016) "Potential Effects of Climate Change on Ecologically Relevant Streamflow Regimes" River Research and Applications 32:9. Pages 1827-1840).

[20] USACE Internal Communication, September 4-5, 2017. "Nationwide Percentage of NWI [National Wetland Inventory] Potential Wetland Acreage Intersection NHD [National Hydrography Dataset]-mapped Streams."

system." *Id.* at 786. The Agencies' 2015 scientific findings show benefits of separated wetlands and floodplain waters in storing floodwater and runoff that would otherwise cause downstream erosion, and benefits in filtering pollutants by allowing sediment and other potential contaminants to settle to the bottom. *See* 2015 TSD at 275-76.

In 2015, the Agencies defined adjacent waters as including bordering, continuous or neighboring waters, by applying the "significant nexus" requirement to adjacent waters (including but not limited to wetlands) because science shows that various similarly situated adjacent waters perform functions that significantly affect the chemical, physical, or biological integrity of downstream waters. 2015 TSD at 275-84. As one of the many examples of how the Agencies' proposal ignores their prior findings, the 2015 Rule protects as adjacent waters those within 100 feet of the OHWM of primary waters based on undisputed scientific evidence that these "neighboring" waters perform many critical functions associated with downstream water quality, and thus have a significant nexus to such waters. 2015 TSD at 295-99; SR 4-7.

The Agencies' proposed rule abandons the Clean Water Rule's express protections for wetlands and open waters in 100-year floodplains and ignores, without explanation, the Agencies' prior findings concerning their many benefits to downstream waters. The Agencies' 2015 scientific findings show that wetlands and open waters located in floodplains significantly affect the integrity of downstream waters, and play a very important role in mitigating flooding that can harm the environment, as well as public and private property. By definition a floodplain becomes "inundated during moderate to high flow events." SR A-4. Because adjacent floodplain wetlands and open waters store water during these high flow events, they reduce the frequency of flooding and its associated harms by systematically retaining and releasing large volumes of storm water and runoff. 2015 TSD at 300, 307. The Agencies previously found that "wetlands and open waters in floodplains of streams and rivers and in riparian areas … have a strong influence on downstream waters." 79 Fed. Reg. at 22,196. "The body of literature documenting connectivity and downstream effects was most abundant for . . . riparian/floodplain wetlands." 2015 TSD at 104. With wetlands in floodplains no longer protected by the proposed rule in many situations, these benefits to downstream waters would be lost.

The proposed replacement rule also reduces benefits to downstream waters by removing protections afforded under the Clean Water Rule for waters within 1500 feet of tidally influenced traditional navigable waters, territorial seas, and the Great Lakes. The scientific literature previously relied on by the Agencies describes how such wetlands and other similar waters provide functions that significantly affect these primary waters. These functions include "improv[ing] water quality through assimilation, transformation, or sequestration of nutrients, sediment, and

other pollutants that can affect downstream water quality. These waters also provide important habitat for aquatic-associated species to forage, breed, and rest in." 80 Fed. Reg. at 37,086; 2015 TSD at 302-05.

The proposed replacement rule also forfeits the benefits to downstream waters provided by wetlands that are separated from other waters by dikes, barriers and similar structures. 84 Fed. Reg. at 4184. Numerous ecological connections have been proven to exist between waters separated by barriers, and those connections serve important chemical and biological functions for downstream waters. 2015 TSD at 289-293. The Agencies documented in 2015 that seepage through such barriers is "a normal condition . . . because water seeks the path of least resistance," and that these structures are "subject to breaches and breaks . . . [and] to failure." 2015 TSD at 286. In fact, many engineered berms and levees are designed to allow hydrologic connections, and studies confirm that natural barriers do not prevent hydrologic connections between waters on either side. 2015 TSD at 287-88.

3. Reduced Protections for Case-specific Waters Harm Downstream Waters.

Without consideration of water quality protection, the proposed replacement rule eliminates federal discretion to consider on a case-by-case basis whether waters require coverage under the Act based on the significant nexus standard. *See* 84 Fed. Reg. at 4160-61, 4169.[21] The Clean Water Rule sets forth a list of potentially covered waters subject to case-by-case review to determine whether such waters must be protected under the significant nexus standard. They include: (1) Prairie potholes, Carolina and Delmarva bays, Pocosins, Western vernal pools, and Texas coastal prairie wetlands; (2) waters in the 100-year floodplain of a navigable-in-fact water, interstate water or the territorial seas; and (3) waters within 4000 feet of the OHWM or high tide line of other covered waters. 33 C.F.R. §§ 323.3(a)(7), (a)(8). The proposed rule's elimination of protections for these waters will negatively impact downstream waters as well as the ecological functions these waters provide.

In promulgating the Clean Water Rule the Agencies previously found, based on the extensive scientific record, that the regional waters described above are "similarly situated (i.e., they have a similar influence on the physical, chemical and

[21] Case-specific review of the specified waters is consistent with Justice Kennedy's *Rapanos* opinion because such waters are covered under the Clean Water Rule only if they have a "significant nexus" to navigable-in-fact waters, interstate waters, or the territorial seas. 33 C.F.R. §§ 323.3(a)(7), (a)(8); 323.3(c)(5). The functions performed by these upstream waters vary in significance across different terrains and climates. SR 6-5. Allowing case-specific review of the waters in the prescribed categories is appropriate because their regional status or location makes it likely that some of them will satisfy the significant nexus test.

biological integrity of downstream waters and are similarly situated on the landscape) and thus could be considered waters of the United States" on a case-specific basis if they are shown to significantly affect the integrity of downstream traditional navigable waters, interstate waters or the territorial seas. 2015 TSD at 162-63, 330-49. The proposed replacement rule would likely exclude these waters, and their benefits to downstream waters would be lost.

The record on which the Agencies relied in promulgating the Clean Water Rule also supports that rule's case-specific protections for some waters located within the 100-year floodplain of primary waters. The Science Report documents how wetlands and open waters in floodplains can be functionally integrated with and affect the integrity of downstream waters. SR 6-3, 6-4.

The Clean Water Rule's case-specific treatment of waters within 4000 feet of the high tide line or OHWM of other covered waters is similarly based on science and the Agencies' expertise. The Agencies' experience across varied settings in this country has shown that the vast majority of waters found to significantly affect other jurisdictional waters are located within 4000 feet of that water. 80 Fed. Reg. 37,065; 2015 TSD at 356, 379-80. Scientific studies confirm that such wetlands and open waters can and do perform a variety of functions that significantly affect downstream waters' integrity. 2015 TSD at 360-67[22]. Faced with the reality that available science does not allow precise line-drawing for functional connectivity across varying watersheds, the Clean Water Rule reasonably established a framework for these case-specific determinations, while at the same time addressing public concerns about jurisdictional uncertainty. 2015 TSD at 357-58, 361. The proposed replacement rule eliminates any consideration of waters on a case-by-case basis to determine their significant nexus to downstream waters, without justification or supporting evidence, contrary to the Act's objective.

III. The Proposed Replacement Rule's Interpretation of the Act and of the Constitution Is Wrong and Provides No Reasoned Basis for the Agencies' Change of Course

The proposed replacement rule's purported federalism and constitutional concerns have no rational basis and rely on misinterpretations of the Act, the case law and the Constitution. For these reasons, the Agencies have failed to provide reasoned explanation for their about face in the proposed rule.

[22] *See,* e.g., Kao, C.M., W.J.Y., K.F. Chen, H.Y. Lee, and M.J. Wu, Non-point source pesticide removal by a mountainous wetland. 46 Water Science and Technology at 199-206 (2002) (non-floodplain North Carolina wetland captures pesticide runoff from upgradient agricultural lands preventing downstream pollution.)

A. The Proposed Replacement Rule's Purported Federalism Rationale and Emphasis on Non-Regulatory Programs at the Expense of Water Pollution Control Misconstrue the Act, and the Agencies Have Changed Course Without Reasoned Explanation.

Throughout the Agencies' notice of proposed rulemaking (*see*, e.g., 84 Fed. Reg. at 4169, 4187, 4195), the Agencies assert that its severely diminished water quality protections are justified by 33 U.S.C. § 1251(b), which states the policy of Congress "to recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce and eliminate pollution [and] to plan the development and use (including restoration, preservation and enhancement) of land and water resources . . ." The Agencies also assert that the "non-regulatory grant, research, nonpoint source, groundwater, and watershed planning programs" under the Act reveal Congress' intent to limit the use of federal regulatory mechanisms for controlling water pollution. 84 Fed. Reg. at 4169. Neither of these assertions is supported by the Act, by its history, or by case law.

1. Section 1251(b) Provides for State Primacy in Abating Pollution.

Section 1251(b) is primarily concerned with state implementation of water pollution control measures, not the jurisdictional reach of the Act. The policy of giving states primary responsibility for pollution abatement is reflected in the Act's provisions and structure, which encourages or assigns states that responsibility. A lawful and protective definition of covered waters under the Act does not disturb or undermine the states' exercise of primary authority.

The Clean Water Act affords states broad authority to set and enforce water quality standards for their waters and authorizes them to implement the Act's permit programs if the state programs meet the Act's criteria. States set water quality standards by designating uses and water quality criteria for their waters. They exercise wide discretion in doing so, taking into account local environmental and economic conditions.

> Such standards shall be such as to protect the public health or welfare, enhance the quality of water and serve the purposes of this chapter. Such standards shall be established taking into consideration their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and agriculture, industrial, and other purposes, and also taking into consideration their use and value for navigation.

33 U.S.C. § 1313(c). If a state's water quality standards are not achieved for a particular water, the state enforces them by establishing "total maximum daily loads" for the offending pollutants. *Id.* § 1313(c). The Act also allows states to

impose conditions in Section 401 certifications to ensure their water quality standards are met in connection with the construction or operation of facilities that require federal licenses or permits and discharge pollutants to navigable waters. If state water quality standards are not met, they can veto construction or operation of the facilities. *Id.* § 1341.

States also can implement the National Pollutant Discharge Elimination System (NPDES) permit program instead of EPA, and the Dredge and Fill permit program instead of the Army Corps, under sections 402 and 404 of the Act, respectively. *Id.* § §1342, 1344.[23] The legislative history shows that the purpose of Section 1251(b) was to have the states exercise their primary authority by operating the NPDES program. Cong. Research Serv., Ser. No. 93-1, A Legislative History of the Water Pollution Control Act Amendments of 1972, at 403 (1973) (describing the "responsibility of states to prevent and abate pollution by assigning them a large role in the national discharge permit system established by the Act."). Case law confirms Congress' view that Section1251(b) is principally concerned with the "primary responsibilities and rights of States to prevent, reduce and eliminate pollution" through EPA-approved programs for "State… issu[ance] [of] NPDES permits . . ." *EPA v. California ex. rel. State Water Res. Control Bd.*, 426 U.S. 200, 207-208 & n. 16 (1976) (citing §1251(b)). Similarly, in *Int'l Paper Co. v. Ouellette*, 479 U.S 481, 489 (1987), the Court referenced State-administered NPDES permit programs and Section1251(b) as "recogni[tion] that the States should have a significant role in protecting their own natural resources." *See City of Arcadia v. U.S. EPA*, 411 F.3d. 1103, 1106 (9th Cir. 2005), citing §1251(b) for "the basic goals and policies that underlie the Clean Water Act – namely, that states remain at the front line in combating pollution."

The NPDES permit program is the centerpiece of the Act. Neither the Clean Water Rule, nor the Agencies' regulations preceding it, have impeded states from exercising their primacy by choosing to operate that program. So the proposed replacement rule does not serve the purpose of Section 1251(b) in this regard. And the proposed replacement rule's reduced scope of protections would undermine the primacy of states to decide for themselves whether to implement the Section 404 dredge and fill program. Nearly all states have chosen to let the Army Corps operate the 404 program rather than operating it themselves. Reducing the scope of the program places burdens on the states, by pressuring them to fill the gap and operate or expand their own programs, which would entail bearing high start-up costs and continuing administrative burdens, as the Agencies acknowledge. EA at 29. This process will also involve significant time given the likelihood that affected interests would oppose any new rules at the state level. In the interim period,

[23] All States except the undersigned Massachusetts and District of Columbia, operate the 402 program. Due to the costs and difficulties of administering the 404 program, only two States do so, the undersigned Michigan and New Jersey.

waters that would no longer be subject to federal protection if the proposed rule is implemented would be unprotected and face serious threats of degradation.

Thus, the proposed replacement rule would actually harm the states in exercising their primacy under Section 1251(b).

2. Section 1251(b) Provides No Support for Removing Protections for Waters with a Significant Nexus to Downstream Waters.

There is no support in case law for the Agencies use of §1251(b) in the proposed replacement rule to justify decreased protections for waters that significantly affect downstream waters. Their reliance on *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers,* 531 U.S. 159 (2001) (*SWANCC)* in this regard is unavailing because that case concerned "ponds and mudflats that were isolated" and lacked a "significant nexus" to other waters covered by the Act. *Rapanos*, 547 U.S. at 766-67 (Kennedy, J., concurring). Indeed, the Agencies acknowledge that they "have historically limited the [*SWANCC]* decision's application to isolated ponds and mudflats used by migratory birds." 84 Fed. Reg. at 4167. That the majority opinion in *SWANCC* referenced Section 1251(b) in this limited context does not legitimize the Agencies' proposal to severely reduce existing protections for waters that significantly affect the integrity of downstream waters.

Further demonstrating that Section 1251(b)'s proper focus is state pollution prevention and control measures within the federal system, Justice Kennedy explained in *Rapanos* that the Act's policy of respecting "States' responsibilities and rights [under 42 U.S.C.] § 1251(b)" encompasses respect for State water pollution policies that rely on the Act to "protect downstream States from out-of-state pollution that they themselves cannot regulate." *Rapanos,* 547 U.S. at 777 (internal quotation and citation omitted). And in *Shanty Town Assocs., Ltd. v. EPA*, 843 F.2d 782 (4th Cir. 1988), the U.S. Court of Appeals for the Fourth Circuit rejected a previous attempt to use §1251(b) as a justification for reduced federal pollution controls. In that case the court declined to construe Section 1251(b) as granting states autonomy from federal controls under the Act. There the court noted that "Congress was forced to shift primary control for the control of nonpoint source pollution to the states" due "not to Congress' concern for state autonomy," but instead to the "practical difficulties" associated with establishment of "uniform federal regulation" of nonpoint source pollution. *Shanty Town Assocs., Ltd,* 843 F.2d at 791. Even then, however, Congress "retain[ed] substantial control over the regulation of nonpoint source pollution" by requiring EPA to review State nonpoint source controls. *Id.* at 791.

3. The Proposed Replacement Rule Does Not Advance the Primacy of States Under §1251(b) to Plan the Development and Use of Land and Water Resources.

The Agencies cannot justify the proposed replacement rule by claiming that the existing definition of "waters of the United States" impairs the "primary responsibilities and rights of States . . . to plan the development and use (including restoration, preservation and enhancement) of land and water resources." 33 U.S.C. § 1251(b). Defining the waters that are protected under the Act has never interfered with the primacy of states "*to plan*" such activities. State laws directly address development planning, typically by delegating primary responsibility to local "planning boards" or other municipal entities. In New York and other States, for example, municipal planning boards and commissions take the lead in reviewing development proposals, ensuring compliance with applicable laws, and tracking a variety of permits required for a development to proceed.

The Act's NPDES and Section 404 permits are no different than the myriad of other federal, state, and local permits that primary planning agencies and developers must address in planning the development of land. While a wetland that is deemed a "water of the United States" may need to be filled to construct a development project, that fact does not take primary *planning* responsibility away from state or local authorities; it merely establishes that a permit may be needed to perform the activity, along with other permits that may be required for the project. Many Section 404 permits are granted under pre-authorized nationwide permits that allow development projects to proceed subject to specified mitigation requirements. Other Section 404 permits often are granted on a case-by-case basis.

Moreover, under the Act states set water quality standards for their waters and are specifically authorized to consider their local needs concerning "public water supplies, propagation of fish and wildlife, recreational purposes, and agriculture, industrial, and other purposes" in doing so. 33 U.S.C. § 1313. Nothing in the Act, or the scope of waters it protects, shifts to the Agencies the authority of local planners to take the lead in land development and water resource planning.

4. There Is No Support for the Agencies' Attempt to Use the Act's Non-regulatory Programs as a Justification for the Proposed Replacement Rule's Reduced Water Protections.

Equally untethered to the law is the Agencies' contention that "non-regulatory programs" under the Act somehow require reduced "us[e] [of] the Act's federal regulatory mechanisms" in order for the Agencies to "fully implement the entire structure of the Act." 84 Fed. Reg. at 4169. This attempt to "balance" the Act's objective to "restore and maintain the chemical, physical and biological integrity of the Nation's waters," 33 U.S.C. § 1251(a), against research and funding provisions of the Act, is baseless. There is no support in the Act's history or in case

law for the Agencies' suggested "trade off" between controlling pollution at its source and assisting states through research, grants and planning programs. These are complementary, not mutually exclusive, ways for achieving Act's objective. *See Shanty Town Assocs., Ltd.,* 843 F.2d at 791-92 (describing Congress' intent that EPA use "the threat [of withholding grant funds] and promise of federal financial assistance . . . to influence the states to adopt nonpoint source pollution control programs that will accomplish the Act's water quality goals" (internal citations omitted)).

Because the Agencies' "federalism" and "non-regulatory program" justifications for reducing federal water pollution protections lack legitimate legal bases, and contradict both the Act and the Agencies' prior position (*see,* e.g., 2015 TSD at 9-14) without reasoned explanation, the proposed replacement rule is arbitrary and capricious.

B. The Proposed Replacement Rule's Purported Constitutional Concerns Misconstrue Applicable Law, and the Agencies Have Changed Course Without Reasoned Explanation.

The Agencies' suggestion in the proposed rule that replacing the Clean Water Rule with the proposed rule is necessary "to avoid regulatory interpretations of the [Act] that raise constitutional questions," 84 Fed. Reg at 4168, is without legal merit. Their purported concern about limited Commerce Clause authority in this regard, referencing *SWANCC* (*see* 84 Fed. Reg. at 4170), misses the mark and does not justify the proposed rule. As explained above, the isolated intrastate waters in *SWANCC* lacked the jurisdictionally-required significant nexus to downstream waters. But the Clean Water Rule that the proposed rule would replace is based on the significant nexus standard, and raises no legitimate constitutional concern warranting replacement. In *Rapanos,* Justice Kennedy made clear that compliance with the "significant nexus" standard "will raise no serious constitutional or federalism difficulty" and "prevents problematic applications of the statute" that could raise such concerns. *Rapanos*, 547 U.S. at 782-83 (Kennedy, J., concurring in the judgment).

The polluting activities controlled by the Act, such as point source discharges of waste, are economic in nature and subject to regulation under the Commerce Clause. *See, e.g., Chem. Waste Mgmt., Inc. v. Hunt*, 504 U.S. 334, 340 n.3 (1992) (solid waste is an "article of commerce"). The Clean Water Rule, by protecting both traditional navigable waters and the waters that significantly affect them, provides "'appropriate and needful control of activities and agencies which, though intrastate, affect that [interstate] commerce.'" *Rapanos*, 547 U.S. at 783 (Kennedy, J., concurring in the judgment) (quoting *Oklahoma ex rel. Phillips v. Guy F. Atkinson Co.*, 313 U.S. 508, 525-26 (1941)); *see also United States v. Riverside Bayview Homes, Inc.,* 474 U.S. 121, 133 (1985) (noting Congress' intent under the Clean Water Act to "exercise its powers under the Commerce Clause to regulate at

least some waters that would not be deemed 'navigable' under the classical understanding of that term").

Indeed, the Clean Water Rule supports our federal system by helping to maintain a level playing field while improving the water quality and economies of all states. The scope of the Clean Water Rule does not render it unconstitutional because "the power conferred by the Commerce Clause [is] broad enough to permit congressional regulation of activities causing air or water pollution, or other environmental hazards that may have effects in more than one State." *Hodel v. Va. Surface Min. & Reclamation Assn.*, 452 U.S. 264, 282 (1981) (upholding the constitutionality of the Surface Mining Control and Reclamation Act of 1977).

In addition, the Supreme Court has made clear that federal laws like the Clean Water Act that prescribe minimum federal standards through a valid exercise of the commerce power do not violate the Tenth Amendment. "The Court long ago rejected the suggestion that Congress invades areas reserved to the States by the Tenth Amendment simply because it exercises its authority under the Commerce Clause." *Hodel,* 452 U.S. at 291. And it is clear that the Clean Water Rule the Agencies seek to replace, which is based on the significant nexus standard, is a valid exercise of the commerce power that "raise[s] no serious constitutional or federalism difficulty." *Rapanos*, 547 U.S. at 782 (Kennedy, J., concurring).

The Agencies' purported constitutional concerns in the proposed replacement rule lack legal support. The Agencies provide no reasonable explanation for the change from their prior position that the Clean Water Rule presents no constitutional concerns (*see,* e.g., 2015 TSD at 83-91), rendering the proposed rule arbitrary and capricious.

IV. The Proposed Replacement Rule's Exclusion of Interstate Waters as Protected Waters is Contrary to the Act and Controlling Precedent, and the Agencies Have Changed Course Without Reasoned Explanation.

In a complete departure from all previous agency rules defining "waters of the United States" under the Act, the proposed replacement rule excludes interstate waters from the Act's protections. 84 Fed. Reg. at 4171. The proposed replacement rule's failure to protect all interstate waters is contrary to the language, structure and history of the Act, and defies controlling precedent. The Agencies in the proposed rule have misconstrued the statutory text, and ignored fundamental purposes of the Act as confirmed by the Supreme Court, rendering their rationale for excluding interstate waters strained and irrational.

The language of the Act demonstrates that it protects interstate waters by continuing to subject them to federal regulation. Enacted in 1972, Section 303(a) of the Act provides in pertinent part that any pre-existing "water quality standard

applicable to *interstate waters* . . . shall remain in effect," unless determined by EPA to be inconsistent with any applicable requirements in effect prior to 1972. 33 U.S.C. §1313(a) (emphasis added). Although in the proposed rule the Agencies claim fidelity to the Act's statutory text and to the principle of giving effect to all statutory provisions, the proposed rule simply glosses over section 303(a) while mis-citing it as section 303(c) (*see* 84 Fed. Reg. at 4171), and then ignores section 303(a)'s plain language by stating that it "may be referring to interstate navigable waters,'" 84 Fed. Reg. at 4172, adding the word "navigable" that doesn't exist in the statutory provision.

In excluding interstate waters from the Act's protections the Agencies employ a cramped interpretation of the Act that ignores the purpose of the 1972 Amendments, which was to expand, not, narrow, federal protection of waters. Congress enacted the 1972 Amendments recognizing that prior mechanisms for abating water pollution "ha[d] been inadequate in every vital respect," S. Rep. No. 414, 92nd Cong. 1st Sess. 7 (1972), and in doing so "occupied the field by establishment of a comprehensive regulatory program . . . not merely another law 'touching interstate waters,'" *City of Milwaukee v. Illinois*, 451 U.S. 304, 317 (1981). In *City of Milwaukee* the Court reversed its pre-1972 Amendments case, *Illinois v. City of Milwaukee*, 406 U.S. 91 (1972). The Court found that the 1972 Amendments had superseded the federal common law of nuisance as a means to protect interstate waters, in favor of a statutory "all-encompassing program of water pollution regulation." *City of Milwaukee*, 451 U.S. at 318. As explained by the Agencies in 2015, "[s]ince the federal common law of nuisance (as well as the statutory provisions regulating water pollution in the Federal Water Pollution Control Act) applied to interstate waters whether navigable or not, the [Act] could only occupy the field of interstate water pollution if it too extended to non-navigable as well as navigable interstate waters." 2015 TSD at 210.

The Agencies' proposed replacement rule avoids mention of seminal Supreme Court cases demonstrating the Act's applicability to interstate waters regardless of navigability. In both *International Paper v. Ouellette*, 479 U.S. 481 (1987), and *Arkansas v. Oklahoma*, 503 U.S. 91 (1992), the Court detailed how the Act had supplanted the federal common law of nuisance and established the controlling statutory scheme for addressing interstate water pollution disputes. As explained by the Agencies in the 2015 TSD at 211 n. 16, "[n]othing in either decision limits the applicability of the [Act] to interstate water pollution disputes involving navigable interstate waters or interstate waters connected to navigable waters."

Protection of interstate waters under the Act, regardless of their navigability, has been longstanding, correct, and essential. Without such protections, "[s]tates with cities and industries situated upstream on the non-navigable tributaries of our great rivers could freely use them for dumping raw sewage and noxious industrial wastes upon their downstream neighboring states." *United States v. Ashland Oil &*

Transp. Co., 504 F.2d 1317, 1326 (6th Cir. 1974). In the Act, Congress intended to prevent the harms to downstream states from such detrimental activities.

In addition to being consistent with the statute's language, history and purpose, and consistent with case law, Congress has acquiesced to the Act's protection of interstate waters. *See* 2015 TSD at 219-23. In this rulemaking the agencies express "concern[ ] about continuing to rely on congressional acquiescence to their regulatory definitions," 84 Fed. Reg. at 4171, but provide little analysis of the congressional acquiescence doctrine to explain the reversal of their prior position. Because the proposed replacement rule's removal of protections for interstate waters is contrary to law, and the Agencies have reversed their previous position on protecting interstate waters without adequate or reasoned explanation, the proposed rule is arbitrary and capricious.

V. The Proposed Replacement Rule is Arbitrary and Capricious Because It Promotes Regulatory Confusion Rather than Certainty

A rule is arbitrary and capricious if it "frustrates the regulatory goal" of the agency. *Mercy Catholic Medical Center v. Thompson*, 380 F.3d 142, 156 (3d Cir. 2004). "Rational decision making also dictates that the agency simply cannot employ means that actually undercut its purported goals." *Office of Communication of United Church of Christ v. FCC*, 779 F.2d 702, 707 (D.C. Cir.1985). The Agencies assert that the "proposed rule is intended to increase CWA program predictability and consistency by increasing clarity as to the scope of "waters of the United States" regulated under the Act. 84 Fed. Reg. at 4154, 4156 ("The Agencies believe the proposed definition would also ensure clarity and predictability for Federal agencies, States, Tribes, the regulated community, and the public."). But the replacement rule would only make defining the "waters of the United States" less predictable, less consistent, and less clear. Accordingly, it frustrates and undercuts the Agencies' goal, and is arbitrary and capricious.

The Agencies promulgated the Clean Water Rule in 2015 to replace the 1980s regulations after having found the 1980s regulations "did not provide the public or agency staff with the kind of information needed to ensure timely, consistent, and predictable jurisdictional determinations." 80 Fed. Reg. at 37,056. Replacement of the 1980s regulations with the Clean Water Rule was necessary, in the Agencies' view, "to ensure protection of our nation's aquatic resources and make the process of identifying 'waters of the United States' less complicated and more efficient. The [Clean Water] [R]ule achieves these goals by increasing CWA program transparency, predictability, and consistency . . . with increased certainty and less litigation." 79 Fed. Reg. at 22,190.

While the Clean Water Rule serves those objectives, the proposed replacement rule does not. Rather than increase "program predictability and consistency," the proposed rule does the opposite, eroding the substantial

improvements in clarity achieved by the Clean Water Rule. The Clean Water Rule in most instances enables the Agencies and regulated community to learn which waters are covered by the Act by making simple inspections, objective measurements, or consulting maps, and without necessarily requiring the expense of hiring expert consultants. As illustration, a "tributary" under the Clean Water Rule is a water that (1) has physical indicators of a bed and bank and an OHWM, and (2) contributes flow directly or indirectly to primary waters, consisting of traditional navigable waters (waters that can be navigated by a boat), interstate waters, or the territorial seas (*e.g.*, the oceans). 33 C.F.R. § 328.3(c)(3)(iii). The required physical indicators of bed, bank, and OHWM can be verified by visual observations. Identifying whether the waterway flows directly or indirectly into one of the primary waters also need not be difficult. The primary waters receiving the flow are often known to the landowner, the public more generally (*e.g.*, the Hudson River (traditionally navigable) or the Atlantic Ocean (territorial sea)), and if not can be obtained in simple internet searches.

The proposed replacement rule stands in sharp contrast to the Clean Water Rule. Identifying a "tributary" now would be a complex, uncertain, and expensive undertaking. Under the proposed rule, a tributary must be perennial (flowing continuously year-round in a typical year) or intermittent (flowing continuously during certain times of a typical year and more than in direct response to precipitation), and not ephemeral (flowing or pooling only in direct response to precipitation). 84 Fed. Reg. at 4204.

To determine whether a waterway qualifies as a tributary under the proposed rule, one would need to identify its flow regime to decide which, if any, of the above classifications it fits into. This inquiry may entail, in addition to a field visit: remote and field-based tools, such as visual observations, photographs, data collection on flow, trapezoidal flumes and pressure transducers for measuring surface flow and comparing that to rainfall; StreamStats by the U.S..Geological Survey (USGS) (available at *https://streamstats.usgs.gov/ss/*), Natural Resources Conservation Service (NRCS); hydrologic tools and soil maps; desktop tools that provide for the hydrologic estimation of a discharge sufficient to generate intermittent or perennial flow, such as a regional regression analysis or hydrologic modeling; USGS topographic data, or modeling tools using drainage area, precipitation data, climate, topography, land use, vegetation cover, geology, and other publicly available information; identification of field indicators, such as vegetation and macroinvertebrates, which could be regionalized (for example, the Streamflow Duration Assessment Method for the Pacific Northwest, at *http://www.epa.gov/measurements/streamflow-durationassessment-method-pacific-northwest*. 84 Fed. Reg.at 4176-77.

Thus, determining the flow regime by itself is a complex task, relying on a variety of methodologies, and requiring expertise at a minimum in hydrology. As

such, this analysis would yield a range of potentially inconsistent results depending on who the expert is and what specific methodology is used in the analysis. The same is true for another task made necessary by the proposed rule, establishing the "typical year" for the flow regime.[24]

The Clean Water Rule has a clear and easily understood definition of protected riparian and floodplain waters. This is not so for the proposed replacement rule. The Clean Water Rule protects any wetland (or other water) within a 100-foot riparian buffer of a traditional navigable water, interstate water, territorial sea, tributary, or impoundment of a jurisdictional water. 33 C.F.R. 328.3(a)(6), (c)(1), (c)(2)(i). In many instances, it would suffice merely to use a tape measure to determine whether a wetland in such a buffer is subject to the Act's jurisdiction. In contrast, under the proposed rule one would have to determine whether the wetland abutted or had a direct hydrological connection to a jurisdictional water in a typical year – thereby requiring a challenging determination of what "typical" means and a field hydrologic investigation if the wetland was not abutting.

Under the Clean Water Rule, any wetland (or other water): (i) within the 100-year floodplain of a traditional navigable water, interstate water, territorial sea, tributary, or impoundment, and (ii) within 1500 feet of the OHWM of such water is protected under the Act. *Id.* 328.3(a)(6), (c)(1), (c)(2)(ii). A map showing the floodplain as defined in the Clean Water Rule with distances drawn to scale would be sufficient to make the jurisdictional determination. But for the proposed replacement rule, a professional determination of what "typical" means and a

[24] For the "typical year" inquiry, the variety of potential options includes observing rainfall amount and comparing it to tables developed by the Corps using data from the National Oceanic and Atmospheric Administration (NOAA); considering a year to be "typical" when the observed rainfall from the previous three months falls within the 30th and 70th percentiles established by a 30-year rainfall average generated at NOAA; considering a year to be "typical" when the observed rainfall from the previous three months falls within the 30th and 70th percentiles established by a 30-year rainfall average generated at NOAA weather stations; a rolling 30-year period would account for variability to provide a reliable indicator of the climate in a given geographic area without being confounded by a year or two of unusual climate data for the given area; watershed-scale basis to ensure specific climatic data are representative of the landscape in relation to the feature under consideration for meeting the tributary definition; Webbased Water-Budget Interactive Modeling Program (WebWIMP) WETS tables (or similar tools) which are provided by the NRCS National Water and Climate Center and are calculated from long-term (30-year) weather records gathered at National Weather Service; approximate dates of wet and dry seasons for any terrestrial location watershed on average monthly precipitation and estimated evapotranspiration; Palmer Drought Severity Index (PDSI) "snowpack" can be found in the NOAA; and national snow analyses maps.

hydrologic investigation would be needed if the wetland is not abutting, which also can result in inconsistent and unclear outcomes.[25]

Thus, the Agencies were arbitrary and capricious in proposing the replacement rule because it frustrates and undercuts the Agencies' goal "to increase CWA program predictability and consistency by increasing clarity as to the scope of 'waters of the United States.'" *See Mercy Catholic Medical Center v. Thompson,* 380 F.3d at 256.

VI. To the Extent the Agencies Relied on Economic and Programmatic Analyses to Consider the Proposed Replacement Rule's Water Quality Impacts, They Were Arbitrary and Capricious

The Agencies' only analysis of the proposed replacement rule's impacts on water quality and on the benefits provided by water quality is set forth in "supporting analyses" described in two reports: the EA and a "Resource and Programmatic Assessment." *See* 84 Fed. Reg. at 8400. In these analyses, the Agencies concluded that the proposed rule's expected cost savings outweigh its expected foregone water quality related benefits, and that the proposed rule would have minimal adverse impacts on water quality in three watersheds that were analyzed.

As described in further detail in the review prepared by the States' expert, Dr. Catherine Kling, Professor of Economics at Cornell University (*see* Attachment B), the Agencies' EA did not comply with the *EPA Guidelines for Preparing Economic Analyses* and did not comply with basic professional standards for benefit-cost analysis.[26] According to Dr. Kling's review of the EA, when biases in the Agencies' analysis are corrected, the proposed rule is likely to provide negative net benefits rather than the positive net benefits claimed by the Agencies.

The EA is structurally flawed, internally inconsistent, utilizes assumptions or analytics unsupported by the economics literature, or is otherwise unclear or inadequately explained. For example, the Agencies' analyses contain no direct

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[25] The agencies state that a hydrologic surface connection with a wetland, sufficient to be jurisdictional under the Act, can result from inundation "as a result of seasonal or permanent flooding, for example, so long as inundation occurs in a typical year and has at its source a jurisdictional water." 84 Fed. Reg. at 4186. But they provide no explanation of how to determine whether the inundation would occur on at least a seasonal basis in a "typical" year, compounding the uncertainty and lack of clarity of coverage under the Act on this basis.

[26] *EPA Guidelines for Preparing Economic Analyses*, U.S. Environmental Protection Agency https://www.epa.gov/environmental-economics/guidelines-preparing-economic-analyses#download (accessed March 29, 2019).

comparisons between the Clean Water Rule and the Proposed Rule. The Agencies failed to consider the hundreds of jurisdictional determinations nationwide that they already rendered under the Clean Water Rule to determine the degree to which jurisdiction would be lost if the proposed replacement rule applied instead. The Agencies also failed to evaluate jurisdictional effects of the proposed replacement of the Clean Water Rule in three case study watersheds. Instead, they only evaluated the impact of the proposed rule on jurisdiction in those watersheds by comparing it to the pre-Clean Water Rule regulations. They provided no reasoned basis for failing to examine the proposed rule's jurisdictional effects by using the Clean Water Rule as the primary baseline, as required by the EPA Guidelines.

The Agencies' methodology for quantifying the value of wetlands is unsupported by the economics literature, and significantly underestimates the value of lost wetlands benefits from the Proposed Rule because, among other things, it ignored the benefits provided by wetlands to people living outside the state where they are located. In addition, the Agencies incorporated speculative state regulatory changes in response to lessened federal jurisdiction into their analysis even though the EPA Guidelines specifically state that only regulations that are already promulgated, or that are "imminent, or reasonably anticipated with a high degree of certainty" should be considered. EPA Guidelines, 2011, p.5-13. Even if consideration of State responses to the proposed rule were appropriate, the Agencies did not estimate or otherwise incorporate into their analysis any costs that states would incur for having to initiate or expand regulatory programs to take over for a curtailment in federal responsibility under the proposed rule, despite the Agencies' acknowledgement that such costs could be considerable. EA at 29.

The Agencies employed a Soil and Water Assessment Tool ("SWAT") in three watersheds to evaluate potential water quality impacts resulting from the proposed replacement rule. However, the Agencies did not demonstrate that the SWAT models were peer reviewed or that they were properly calibrated to the watersheds in which they were applied. For these and other reasons, the SWAT modelling results do not conform to accepted professional standards for modeling, and their output is not valid to support any reasonable conclusions about water quality impacts in the three watersheds.

In the Agencies' analysis of the proposed replacement rule's effect on the Section 404 program nationwide, the combined effect of analytic deficiencies results in estimates of the monetary value of lost wetland benefits under the proposed rule that are biased sharply downward, and estimates of the costs savings of complying with the rule that are biased upward.

In sum, to the extent the Agencies relied on their deficient supporting analyses to consider the economic impacts or water quality impacts of the proposed

replacement rule, they were arbitrary and capricious in doing so. *See Home Builders Ass'n of Northern California v. United States Fish and Wildlife Service*, 2007 WL 201248, *3-*4 (E.D. Cal. Jan. 24 2007) (remand to agency because it engaged in improper economic analysis by failing to consider all benefits of critical habitat designation); *High Country Conservation Advocates v. United States Forest Service*, 52 F.Supp.3d 1174, 11-91-92 (D. Colo. 2014) (agency was arbitrary and capricious to rely on benefits of coal lease modifications while ignoring evidence of climate change costs).[27]

CONCLUSION

For all of these reasons, the States strongly oppose the proposed rule to replace the Clean Water Rule, and respectfully request that the Agencies not proceed with or finalize it.

Sincerely,

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[27] In addition, as the Agencies did not disclose important aspects of their EA, the public has been denied the opportunity for meaningful comment on it in violation of the APA's notice requirements. *See Am. Med. Ass'n v. Reno*, 57 F.3d 1129, 1132-33 (D.C. Cir. 1995).

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Attachment A

SPECIFIC STATE CONCERNS ABOUT THE PROPOSED RULE

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California

If finalized, the Proposed Rule will adversely impact California in several ways.

I. The Proposed Rule Will Deprive Many of California's Waterbodies of CWA Protections Afforded under the Clean Water Rule and the "Significant Nexus" Standard.

California's climate and hydrologic regimes range from coastal rain forest to inland desert. Many parts of the State are arid or semi-arid, and mountain ranges cover much of the State. In most places, precipitation is highly seasonal and varies greatly from year to year. These environmental conditions result in a large inventory of non-perennial waters, such as swales, vernal lakes, vernal pools, desert seeps and springs, dry lake beds, and ephemeral and intermittent headwater streams.

A. The Proposed Rule Will Exclude Ephemeral Waters from CWA Jurisdiction and Will Degrade the Quality and Integrity of California's Waters

Under the Proposed Rule, ephemeral waterbodies will no longer be subject to CWA jurisdiction and the prohibition on discharges of pollutants without a CWA permit. A large proportion of California's waters, and the majority of streams in southern California, are ephemeral. According to the Southern California Coastal Water Research Project, ephemeral streams make up about 60% of all streams in Southern California. In arid regions and some of the mountainous regions, non-perennial streams represent nearly all of the surface waters in the watershed. They are often the headwaters or major tributaries of perennial streams in the desert. Although the statistics pertaining specifically to ephemeral streams are generally not comprehensive or conclusive, the data available so far indicates that the proposed exclusion of ephemeral streams from CWA jurisdiction would be substantial. According to the U.S. Geological Survey National Hydrography Dataset, ephemeral and intermittent streams make up over 81% of all streams in the arid and semi-arid Southwest U.S. (Arizona, New Mexico, Nevada, Utah, Colorado and California). The Proposed Rule would thus effectively eviscerate federal protections over certain parts of the state, particularly the desert regions.

Ephemeral streams warrant federal protections because they serve important ecological functions. Ephemeral streams provide hydrologic connectivity allowing for the transportation of nutrients and the movement and propagation of fish, wildlife, and plants throughout a watershed. Most fish require different physical habitats for each stage of life such that connectivity between perennial, intermittent, ephemeral, and headwater streams is important to fish finding suitable habitat for each stage. Salmon, for example, require habitat complexity for

optimal rearing under different flow conditions. Fish and invertebrates native to rivers are adapted to variable flow regimes, which are strongly influenced by ephemeral tributary streams. Such ephemeral tributary flows can prevent or mitigate invasion by introduced species. Ephemeral streams provide important wildlife movement corridors for migration and dispersal allowing for greater genetic diversity and habitat expansion.

Rich biotic communities often exist in ephemeral stream channels and in the surrounding riparian zones. Ephemeral desert washes are easily recognizable by their dense corridor of vegetation that is in strong contrast to the more sparsely vegetated uplands. These corridors contribute to the disproportionately high biological diversity of desert environments relative to their total area. For instance, desert washes embankments are home to the listed federally and state-threatened desert tortoise.

Relying on a snapshot view, such as a "typical year" as proposed in the Rule, can lead to inaccurate conclusions about a water's relative importance to the watershed. For example, some portions of Murrieta Creek in Riverside County flow only during and immediately after significant storm events. Following severe storms, the stream can transform in a few hours from practically no flow to a rate of thousands of cubic feet per second. Murrieta Creek is nevertheless vital to water quality to waters of the United States because its confluence with Temecula Creek forms the Santa Margarita River. As Murrieta Creek drains over 220 square miles, it would be impractical to address downstream water quality issues without consideration of Murrieta Creek. Indeed, the Army Corps of Engineers has embarked on a project on a multi-purpose flood control, environmental restoration, and recreation project along 7.5 miles of Murrieta Creek.

The Proposed Rule, If Promulgated, May Impact Streams with Artificial Breaks

The Proposed Rule fails to provide an adequate explanation of how the concept of ephemeral flows will be implemented where streams have artificial breaks. The Rule states that tributaries that flow through a culvert, dam, or other similar artificial break or through a natural break would not break jurisdiction so long as the artificial or natural break conveys perennial or intermittent flow to a tributary or other jurisdictional water. 84 Fed. Reg. 4154, 4173. It is unclear what amount of flow is necessary to distinguish intermittent flow from ephemeral flow in the context of an artificial break. It is also unclear whether the artificial break could purposefully be closed or sealed for the purpose of reducing jurisdiction. The Proposed Rule should foreclose the possibility that different reaches of the same stream have different jurisdictional statuses. The San Joaquin River, one of California's largest rivers, spans 366 miles, starting as snowmelt in the Sierra Nevada Mountains, cascading down to fill a reservoir at Friant dam, and eventually

spilling into the San Francisco Bay. Because the river is dammed at various points, it frequently runs dry for long stretches in a section between the Friant Dam and Mendota. California already has a myriad of difficult considerations to weigh when determining the appropriate flows for the San Joaquin River and tributaries thereof. Conditioning federal protections on this decision would add an unwarranted layer of complexity.

B. The Proposed Rule Will Negatively Impact California's Wetlands

Many of California's wetlands do not have a continuous surface connection with other jurisdictional waters, but retain a subsurface connection or intermittent connection to other surface waters. Nevertheless, these wetlands have significant hydrologic connectivity and functional linkage to jurisdictional waters. For example, vernal pools are a type of wetland that are often connected to other waters via intermittent swales. Vernal pools change dramatically throughout the year in response to varying weather patterns. Even within a single season, a pool may fill and dry several times. Plants and animals are able to survive the dry periods as seeds, eggs, or cysts. Vernal pools are valuable because they sustain a unique diversity of native flora and fauna. In the 2015 rulemaking regarding the definition of waters of the United States, EPA described western vernal pools as "reservoirs of biodiversity." 80 Fed. Reg. 37054, 37072 (June 29, 2015). Specifically, vernal pools provide habitat for a number of endangered species, including fairy shrimp. According to EPA's website about vernal pools, they are also an increasingly threatened ecosystem. More than 90 percent of California's vernal pools have already been lost.

Despite the lack of surface connection, these wetlands have much of the same functionality as wetlands with continuous surface water connections. As noted in Justice Kennedy's *Rapanos* concurrence, wetlands perform at least three functions that that are related to the integrity of other waters: pollutant trapping, flood control, and runoff storage. Wetlands with subsurface connection or with intermittent surface connection to other waters can provide all of these vital functions. A surface connection is not a necessary precondition for wetland functionality. For instance, wetlands reduce nitrogen pollution. Because some forms of nitrogen are highly mobile in groundwater, even wetlands with only a subsurface groundwater connection can perform essential denitrification for nearby surface waters. The lack of continuous surface water connection can also be beneficial to downstream waters because a wetland without a surface connection can act as a sink that prevents pollutant from flowing to downstream waters. In instances where a manmade feature cut off surface connection, the wetland may also be a surrogate for some of the floodplain function that was lost when the surface connection was partially or fully obstructed. Because of this flood control and runoff storage functionality, wetlands can help ameliorate the effects of climate change.

Requiring a continuous surface connection would fail to preserve federal protections over the diversity of wetlands in a watershed. Wetlands adjacent to smaller tributaries may process more nitrogen and retain more large sediment particles while wetland floodplains associated with larger downstream rivers retain phosphorous and trap finer particles. Protections are needed for both upstream and downstream wetlands to fully address problems of nitrogen and phosphorus as well as sediment in surface waters.

It is also unclear how the Proposed Rule would treat flood control waters that are designed to have only episodic flows and to not have a continuous surface connection with other waters. For example, the Yolo bypass is part of a federal flood control project, and presumably the Proposed Rule would retain jurisdiction over the entirety of the project. However, there are physical barriers that generally cut off surface connection to the Sacramento River. In fact, many years may elapse before it is necessary to open the floodgates on the Sacramento River to flood the Yolo bypass.

II. The Proposed Rule Will Impact California's Water Quality Control Programs and Resources

While California has strong state water quality protections, these state authorities have been used in conjunction with CWA authorities. California relies heavily on CWA Section 404 permits issued by the Army Corps of Engineers to limit state resources utilized in the section 401 water quality certification program. California will have to expend significant resources to implement and enforce its recently adopted, but not yet final and effective, state regulation of dredge or fill activities to ensure the same level of protection for waters that the state has traditionally regulated by the state in tandem with the Corps.

Further, the Proposed Rule, if adopted, will hinder California's ability to effectively control water pollution, because the existing state water quality enforcement mechanism is not as efficient and effective as the CWA enforcement framework. For example, penalties for CWA violations are several times higher than penalties for violations of the California Water Code. In addition, prosecuting enforcement actions under the Water Code will be more cumbersome, because such actions must satisfy a number of prerequisites that are not required for CWA enforcement. The California Water Code also does not authorize citizen enforcement actions.
The dramatic shift proposed by the Agencies would also have widespread implications on other programs. In another example, the section 311 oil spill prevention, preparedness and response program is administered by EPA Region 9 in coordination with California. To the extent the scope of coverage for the section 311 changes, California would need to develop a mechanism to replace those protections. Moreover, California's programs use the CWA as a complement to their state authorities. Constraining CWA jurisdiction may remove the availability of enforcement tools California's Water Boards have traditionally used. Radical

change in the scope of the CWA would require additional resources and administrative reorganization on a scale that would be exceedingly difficult to execute without a lengthy implementation schedule.

III. The Proposed Rule Will Expose California's Waters to Out-of-State Pollution

California does not have authority to regulate discharges of pollution entering its waters from other states. Without a WOTUS definition establishing strong nationwide floor of CWA protections, California will be exposed to out-of-state pollution from states with less stringent water quality regulations. Addressing out-of-state pollution will require extensive state resources dedicated to various efforts ranging from implementing measures to clean up out-of-state pollution to initiating lawsuits against out-of-state polluters based on nuisance or other legal theories. Some rivers that may be particularly affected by out-of-state pollution discharges are the Klamath River and the Colorado River.

The Proposed Rule seeks to exclude "interstate waters" as a categorically protected waters. It is likely that there are interstate waters that would be excluded under the proposed rule but that are nevertheless important to chemical, physical and biological integrity of the Nation's waters. For example, there are ephemeral streams that straddle the border between Oregon and California that may not to be jurisdictional under any of the other proposed categories. These ephemeral streams contribute flow to waters that would remain jurisdictional, such as the Klamath River and the Upper Klamath Lake. To protect the water quality of the Klamath River and Upper Klamath Lake, it is essential to regulate discharges to these ephemeral streams.

In addition, there may be out-of-state ephemeral streams that contribute to traditional navigable waters that straddle state boundaries, and therefore are outside of California's authority to regulate. In another example, the Amargosa River flows from Nye County, Nevada, and terminates in Death Valley, California. The Amargosa River has historically been regulated as a water of the United States, and several segments of the river in California are designated as a National Wild and Scenic River. While most of the Amargosa River is intermittent or ephemeral and flows at the surface only following storm events, there are also areas of perennial flow that sustain riparian and wetland habitat and that serve as critical habitat for a variety of plants and animals including the Amargosa vole, a state and federally listed endangered species. Including interstate waters as a discrete category eliminates the risk that rivers like the Amargosa would lose their jurisdictional status because of its predominant ephemeral nature.

Maine

The State of Maine has enacted several laws that provide protections for our valuable surface waters, including our lakes, rivers, streams, freshwater wetlands and coastal waters and wetlands. Maine's Natural Resources Protection Act has provided protection of many of these resources since the 1980's. At the same time, the Federal Clean Water Act has provided a backstop layer of protection. However, with the proposed changes to the WOTUS Rule, the backstop will be significantly weakened. We are concerned with the number of freshwater wetlands that will not meet the surface water connection requirement in the proposed rule. We are aware of many wetlands that provide valuable functions for water quality, such as floodplain wetlands, which will not pass the test for Federal jurisdiction. Our concerns with this change are that we do have certain exemptions for wetland alterations in state law that can currently be captured under the Federal program. One such exemption allows up to 4,300 square feet of alteration without a permit. With many wetlands no longer subject to Federal protection, there will be no oversight for these activities at either the State or Federal level. In addition, we are concerned that there will be attempts to further erode state jurisdiction to align with the new, weaker Federal definition. The result will be a decline in our overall level of protection for Maine's and the nation's waters.

Don Witherill, Acting Co-Director, Bureau of Water Quality; Maine Dept. of Environmental Protection
Mark Bergeron, Director, Bureau of Land Resources; Maine Dept. of Environmental Protection

Maryland

Maryland is particularly vulnerable to pollution entering its waters from out of state, and thus particularly dependent on a definition of "waters of the United States" that ensures broad federal protection for these upstream waters. For instance, the Chesapeake Bay--perhaps Maryland's most iconic water resource, and the nation's largest estuary--has a watershed that covers 64,000 square miles in parts of six states and the entire District of Columbia, as far north as Cooperstown and as far south as Norfolk. Among the Bay's tributaries, the Susquehanna River alone--which accounts for about half of the freshwater flowing into the Bay--winds more than 400 miles through New York and Pennsylvania before it reaches Maryland. The Susquehanna's drainage basin includes 83 streams that cross state lines, some more than once. Narrowing the definition of "waters of the United States," and thus stripping some upstream waters of federal protection, would hamper Maryland's ability to preserve and improve the quality of the Chesapeake Bay and other state waters.

Massachusetts

The Proposed Rule will harm Massachusetts' interests by impairing water quality in the Commonwealth; disrupting the Commonwealth's efforts to comply with the federal Clean Water Act's mandate to improve water quality in Massachusetts; increasing costs to downstream municipalities and facilities that may become subject to more stringent water quality based effluent limits for direct discharges; and creating confusion for regulatory bodies, project proponents, and the public concerning which streams and wetlands are within the Agencies' jurisdiction.

1. *Impairment of Massachusetts Water Quality from Newly Unregulated Activities*

The health of Massachusetts' many navigable rivers, streams, lakes and coastal areas is inextricably intertwined with the health of upland and upstream wetlands and waterways. These include numerous wetlands and waterways located in Massachusetts and those that flow into Massachusetts from other states, including New Hampshire and Vermont. The Connecticut and Merrimack Rivers are examples of important interstate waters that depend on both federal and state water quality laws for protection. A clear and strong federal baseline is critical to the protection of Massachusetts' own waters, because Massachusetts cannot directly regulate or control out-of-state activities that cause increased pollution to flow into Massachusetts from these interstate waterways.

Although Massachusetts' jurisdiction over wetlands and waterways in the Commonwealth is broad and will not be altered by the Proposed Rule, Massachusetts laws and regulations are not coextensive with federal regulatory tools. Federal requirements under the Clean Water Act help achieve clean water within the Commonwealth. The Agencies' proposal to diminish the number of waters in Massachusetts to which these federal regulatory requirements will be applied will adversely impact water quality in Massachusetts.

For example, polluted stormwater is the leading cause of water quality impairment in Massachusetts. Sediments such as sands, clays, and silts are the most common pollutants in stormwater runoff by volume and weight. Sediment discharge significantly harms Massachusetts waters. Construction site erosion is among the most significant sources of sediments in Massachusetts waterways and wetlands. Stormwater discharges from upland areas contribute to significant erosion and sedimentation in Massachusetts waterbodies. Massachusetts laws do not require stormwater controls in upland areas, absent a showing that the construction will alter defined resource areas. The federal Clean Water Act, in contrast, does impose stormwater controls in upland areas, where construction activity will disturb more than 1 acre and stormwater will discharge to a water of the United States. General Permit for Stormwater Discharges from Construction Activities, 82 Fed. Reg. 6534

(February 16, 2017). Massachusetts would be adversely impacted if this important federal regulatory tool no longer applied to upland construction sites that discharge to Massachusetts wetlands and waterways that do not touch or have an overland connection to traditionally navigable waters under the Proposed Rule.[1]

2. *Disruption of Commonwealth's Regulatory Efforts to Protect and Improve Water Quality in Massachusetts*

Massachusetts is taking actions, under the federal Clean Water Act's established process, to improve and protect water quality within the Commonwealth. In accordance with section 305(b) of the federal Clean Water Act, Massachusetts routinely evaluates its waters to determine their capacity to support "designated uses" as defined in its state water quality standards. These uses include aquatic life support, fish and shellfish consumption, drinking water supply, and primary (e.g., swimming) and secondary (e.g., boating) contact recreation. Pursuant to section 303(d) of the federal Clean Water Act, Massachusetts routinely prepares an integrated list of waters, including waters that are not expected to meet state water quality standards and will require additional regulation, including the development of total maximum daily loads (TMDLs) and the inclusion of water quality based effluent limitations in permits issued under the National Pollutant Discharge Elimination System. By reducing the area of wetlands and waterways in Massachusetts and in nearby states that are subject to federal regulation, the Proposed Rule will cause downstream water quality to decline, disrupting this multi-year federally mandated process that the Commonwealth has been engaging in. Declining water quality may, for example, require the Commonwealth to revise existing TMDLs and to prepare new TMDLs for newly impaired waterbodies, at significant cost to the Commonwealth.

The Proposed Rule will also result in fewer wetlands and waters within and around Massachusetts being within the Agencies' jurisdiction and protection under Section 401 of the Clean Water Act and state regulations implementing Section 401.[2] This reduction in jurisdiction will adversely impact the Commonwealth's ability to protect essential drinking water quality, to moderate stream flow temperatures, and to prevent flood damage in Massachusetts.

[1] This is only one example of the importance of federal protections under the Clean Water Act in Massachusetts. Other examples of federal regulatory tools that are broader than Massachusetts regulatory tools include the Act's permitting programs for stormwater discharges from industrial activities (General Permit for Stormwater Discharges from Industrial Activities, 80 Fed. Reg. 34403 (June 4, 2015)), and for stormwater discharges from municipal sources. *See*, *e.g.,* General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts, 81 Fed. Reg. 21862 (July 1, 2017). These permits were promulgated by EPA pursuant to Section 402(p) of the federal Clean Water Act.

[2] 314 C.M.R. §§ 9.01 - 9.13. The Commonwealth's jurisdiction pursuant to Section 401 is coincident with the United States Army Corps of Engineers' jurisdiction pursuant to Section 404.

For example, when roadway networks were built, many Massachusetts streams were relocated into highway ditches. The Proposed Rule may eliminate these upland ditches from jurisdiction, excluding them from regulation under the Massachusetts 401 Water Quality Certification regulations, resulting in downstream harm from upland stormwater. The Proposed Rule will also harm the health of Massachusetts vernal pools, which are classified as Outstanding Resource Waters of the Commonwealth and are currently afforded the highest level of protection pursuant to Massachusetts 401 Water Quality Certification regulations. Since the Massachusetts Wetlands Protection Act only protects vernal pools located within a state wetland resource area, many other vernal pools that are not so situated will lose 401 protection under the Proposed Rule, even though they typically have a significant nexus to the health of downstream waters.

3. Increased Compliance Costs for Downstream Dischargers

The Proposed Rule would adversely impact Massachusetts municipalities and industrial facilities that discharge directly into navigable-in-fact waterbodies by ultimately requiring them to further limit their own discharges to compensate for increased water pollution that would be caused by the Proposed Rule. Since the Proposed Rule would increase pollution in downstream waterbodies, it would result in more stringent and potentially costly water quality based effluent limitations on downstream dischargers. Entities that discharge into downstream waterbodies include, among others, municipal sewage treatment plants and industrial facilities in Massachusetts.

4. *Increased Confusion Concerning Scope of Federal Jurisdiction Over Waters in Massachusetts*

If ephemeral and certain intermittent streams and wetlands without an overland connection to another jurisdictional water are excluded from federal jurisdiction, confusion will arise for regulatory bodies, project proponents, and the public. For example, confusion will arise over which projects require a MassDEP issued Water Quality Certification pursuant to Section 401 of the Federal Clean Water Act.[3]

Massachusetts is also concerned that the Proposed Rule's definitions of "tributary" and "ditch" are confusing and will lead to the loss of protection of perennial and intermittent streams in Massachusetts. Many tributaries in Massachusetts have been human-altered or relocated into human-made channels. While the Proposed

[3] Section 401 of the Clean Water Act requires that any person applying for a federal permit or license, which may result in a discharge of pollutants into waters of the United States, to obtain a state water quality certification that the activity complies with all applicable state water quality standards, limitations, and restrictions. No license or permit may be issued by a federal agency until certification required by section 401 has been granted. Further, no license or permit may be issued if certification has been denied.

Rule states that tributaries do not lose their protection due to alteration, it also requires they otherwise meet the definition of "tributary" which means they must be naturally occurring. This internal inconsistency and circularity will lead to confusion, litigation, and the potential for lost protection. The Agencies' proposal to exclude ditches will be confusing for the same reason, because many historic tributaries in Massachusetts could meet the definition of ditch. The Proposed Rule improperly shifts the burden to the Agencies to establish that a ditch was constructed in a tributary before exercising jurisdiction over it. This burden will be difficult to meet because changes to the natural landscape in the northeast United States often occurred many decades (or centuries) ago, making the evidence unavailable.

5. *Increased Risks Associated with Flooding*

The Massachusetts Department of Environmental Protection (MassDEP) Wetlands Program received a Wetlands Program Development Grant (WPDG) from EPA in 2010. During this grant cycle, EPA offered funding for states to identify "Vulnerable Wetlands." Thereafter, MassDEP's Wetlands Program produced a report entitled *Mapping and Protecting Vulnerable Wetlands and Stormwater Management Project*.[4] MassDEP's report identifies intermittent or ephemeral headwater streams as offering a high degree of ecological function and comprising a high percentage of total stream miles. Headwater streams and non-floodplain wetlands, including those that are ephemeral or intermittent, are highly effective in storing stormwater flow. The Proposed Rule, if adopted, will increase the possibility that these important areas will be destroyed or filled in and outside of Massachusetts and thereby increase risks to Massachusetts water quality and public and private property in Massachusetts due to increased flooding, along with associated costs.

Many bridge projects in Massachusetts are in floodplains. Bridge projects by the Commonwealth are exempt from the Massachusetts Wetlands Protection Act. Instead, state bridge projects are reviewed under 401, which includes a no flood rise analysis required by the Federal Emergency Management Act. The Proposed Rule will cause areas no longer subject to 401 to become more prone to flooding, increasing the threat to people and property and posing financial burdens on the federal flood insurance program.

[4] http://www.mass.gov/eea/agencies/massdep/water/watersheds/mapping-vulnerable-wetlands.html.

Michigan

Michigan is one of two states to administer both Sections 402 and 404 of the Clean Water Act. Michigan has administered Section 404 for approximately 35 years. Therefore, if the proposed WOTUS Rule is enacted and federal wetland protections are reduced, Michigan serves as an example of what it would cost other states to step in and fill the regulatory void by operating their own wetland protection programs.

The cost to Michigan of administering its Section 404 program is substantial at over $12.3 million. Michigan employs 82 full time employees to run the program.

However, Michigan's program is far from being self-funded. Permit fees generated under the program pay for the cost of 15.4 full time employees, which is less than 20% of the cost of the program. The rest must come from other sources. In Michigan, over $7.5 million of that support is in the form of state general funds. Therefore, to the extent that states may wish to step in and run their own wetland protection programs if federal wetland protections are rolled back, there are likely two options: commit a substantial amount of state money toward it, or impose extremely high permit application fees to recover those costs from the regulated community. Either option would impose a substantial burden on the states, whether it be via commitment of tax dollars or imposing high fees on permit applicants.

New Jersey

STATEMENT OF DIANE DOW

1. I am the Director of the Division of Land Use Regulation, New Jersey Department of Environmental Protection (NJDEP). I have held this position for 3 years, 8 months. I have served with NJDEP in various capacities regulating and protecting freshwater wetlands for over twenty-five years, verifying and delineating the extent of wetlands in the field in accordance with the Federal Manual for Identifying and Delineating Jurisdictional Wetlands, andreviewing and writing permits under the Freshwater Wetlands Protection Act rules. I also had a significant role in drafting the recently adopted changes to the Freshwater Protection Act rules.

2. I submit this declaration to explain the State of New Jersey's interests in the protections afforded by EPA's "Waters of the United States" Clean Water Rule, and to illustrate the harms resulting from the suspension or loss of these protections.

I. Benefits of Wetlands

3. Freshwater wetlands provide many essential benefits to the people and ecological communities of the State and therefore warrant stringent protection. Wetlands protect and preserve drinking water supplies by purifying surface and groundwater. Wetlands provide natural flood and storm damage protection, preventing the loss of life and property by absorbing and storing floodwaters and reducing flood levels. Wetlands also serve as a transition zone between dry land and waterways, which slows erosion. In addition, wetlands provide essential breeding, spawning, nesting, and wintering habitats for a major portion of the State's fish and

wildlife, including migrating birds, endangered species, and commercially and recreationally important wildlife. Finally, freshwater wetlands maintain a critical baseflow to surface waters through the gradual release of stored floodwaters and groundwater, particularly during drought periods.

4. Coastal wetlands similarly provide essential functions to human and ecological communities. As a coastal state, storm damage protection is an especially important benefit of New Jersey's wetlands. Coastal wetlands protect land from coastal hazards such as storm surges, provide habitat for waterfowl and important fish and shellfish species, and assist in absorption of sewage discharges.[5] A negative association has been found between wetlands and economic damages from storms; that is, economic damages are lower where wetlands are present, particularly for more common, less intense storms.

5. Coastal wetlands are estimated to have a total economic value of $193,845 per hectare per year, while inland wetlands are estimated at $25,682 per hectare per year (2007 price levels).[6] These estimated economic benefits are based on various ecosystem services, including food, water, air quality regulation, waste treatment, habitat services, and recreation, in each ecosystem studied. These estimates, however, most likely under-estimate the economic importance of each ecosystem because most studies do not value every single service provided in an ecosystem.

[5] Boutwell, J. L. and Westra, J.V. (2016). The Role of Wetlands for Mitigating Economic Damage from Hurricanes. *Journal of the American Water Resources Association* (JAWRA) 52(6):1472-1481. DOI: 10.1111/1752- 1688.12473

[6] De Groot, R., Brander, L., Van Der Ploeg, S., Costanza, R., Bernard, F., Braat, L., ... & Hussain, S. (2012). Global estimates of the value of ecosystems and their services in monetary units. *Ecosystem services*, *1*(1), 50-61.

6. The function of wetlands in flood abatement is particularly essential in New Jersey. Flooding has and continues to be the most frequent, destructive and costly natural hazard in New Jersey and is responsible for most of the disaster-related damage reported within the State. According to the 2011 State Hazard Mitigation Plan, floods present the highest natural disaster risk to the State with a high expectation of property damage and a near certainty of severe flooding. New Jersey ranks nationally as having one of the highest numbers of flood insurance claims annually and ranks high among states in repetitive flood claims, as defined by the National Flood Insurance Program. From 1993 until April 2010, New Jersey experienced 1,241 floods, causing more than 1.25 billion dollars in property damage and resulting in 14 deaths and 197 injuries.[7] Protecting and restoring wetlands is an essential component in mitigating the effects of flooding in the State.

7. Wetlands also benefit downstream waters by storing floodwaters that would otherwise reach those waters and exacerbate flood damage. Wetlands capture sediments, nutrients, and pollutants from runoff before they reach downstream waters, which protects water quality and allows the downstream waters to continue to provide water supply, recreation, industrial, fisheries, and wildlife habitat benefits. Capture of sediments by wetlands can also reduce the frequency and intensity of dredging needed to maintain safe navigation in downstream navigable waters.

[7] New Jersey Office of Emergency Management. (2011). 2011 New Jersey State Hazard Mitigation Plan. http://ready.nj.gov/mitigation/2011-mitigation-plan.shtml

8. Wetlands also serve as essential habitat for many species. Many wetlands are ephemeral vernal habitats. These seasonal habitats hold water for a certain portion of the year which allows amphibian species, including frogs and salamanders, to breed and raise young without predation from fish species. Several species in New Jersey require these vernal habitats for breeding, including the State endangered blue-spotted salamander and eastern tiger salamander. Many more species, while not requiring vernal habitats, nevertheless use these habitats for breeding and spawning.

9. New Jersey's Freshwater Wetlands Protection Act Rules establish standards for regulated activities in freshwater wetlands, transition areas (upland areas surrounding wetlands providing a buffer between upland development and wetlands) and State open waters. State open waters include all "waters of the State" and "waters of the United States," except for groundwater and certain manmade features which would not otherwise be waters or wetlands. Waters of the State are defined as "the ocean and its estuaries, all springs, streams, wetlands, and bodies of surface or ground water, whether natural or artificial, within the boundaries of the State of New Jersey or subject to its jurisdiction," which provides New Jersey broad jurisdiction to protect the integrity of wetlands and waters.

10. Although New Jersey's wetlands statutes and regulations provide robust protection to the resources within the State of New Jersey, wetlands and waters are not ecologically constrained by political boundaries. No states bordering New Jersey have assumed the Section 404 permitting responsibility; these states

largely rely on the the U.S. Army Corps of Engineers (ACOE) regulation of activities in waters of the United States for the protection of wetlands and waters.

11. The Agencies' proposed rule fundamentally disregards the ecological and public health consequences of insufficiently regulating activities in wetlands and waters, and threaten the wetlands and waters in these states bordering New Jersey. This rollback threatens protection of wetlands, despite their benefits to navigable waters and essential role in the survival of increasingly rare species. Negative impacts to upstream and nearby wetlands and waters in these states which are subject to the rollback of the "Waters of the U.S." rule could have a devastating effect on New Jersey and regionally due to the loss of the above-described services, despite the robust protection of wetlands and waters within the direct jurisdiction of the State of New Jersey. Allowing activities which pollute upstream wetlands in an adjacent state could allow pollution to be introduced into the wetlands and waters downstream in New Jersey, jeopardizing the water supply and habitat functions of New Jersey's wetlands and waters. Watersheds span state borders, and so too do the negative impacts of inappropriate development in wetlands.

12. Inappropriate development in wetlands and waters in adjacent states could also increase sedimentation and pollution in waters that flow through New Jersey, threaten water quality and quantity, exacerbate flooding, negatively impact species important to the economy and ecology of New Jersey, and impede regional efforts to combat climate change. Because the proposed replacement rule would

significantly reduce protections for wetlands, the rule could threaten harm to NJ's waters.

Below is a summary of waterbodies that cross the NY-NJ state boundary and the acres of drainage areas in NY associated with those waterbodies. If these waterbodies and watersheds are not adequately protected in NY under federal jurisdiction, water quality could be negatively impacted in NJ.

Waterbody	**Drainage Area (acres)**
Clove Brook Tributaries	416
Greenwood Lake	7,200
Jennings Creek tributaries	1,100
Beech Brook	135
Ringwood Creek/River	8,900
Cupsaw Brook tributary	115
Ramapo River tributaries	59,000
Ramapo River tributaries	13,600
Masonicus Brook	160
West Branch of Saddle River	1,550
Saddle River	1,650
Pine Brook	1,900
Pascack Brook tributaries	6,200
Muddy Brook	1,120
Cherry Brook	580
Hackensack River/Lake Tappan	31,000
Dorotokeys Run	615
TOTAL ACRES:	135,241

NY does not operate the Section 404 program within that state. It relies on the Army Corps of Engineers to protect wetlands, particularly smaller ones, because NY's freshwater wetlands program only covers freshwater wetlands 12.4 acres or larger in size. While there are legislative efforts in NY to expand the scope of its wetland program to cover smaller wetlands, as of this writing the wetlands law has not changed in NY if it does change, it would take time for NY to develop and implement the program. During that start-up period, filling of the smaller wetlands could proceed.

New Mexico

Under Article XX, Section 21 of the New Mexico Constitution, "protection of the state's beautiful and healthful environment is . . . declared to be of fundamental importance to the public interest, health, safety and the general welfare."

The EPA acknowledges that "over 90 percent of streams in New Mexico are mapped as ephemeral or intermittent." U.S. Environmental Protection Agency and Department of the Army, "Economic Analysis for the Proposed Revised Definition of 'Waters of the United States'" at 120 (December 14, 2018). The EPA further states that "in some parts of the country, streams may be perennial or intermittent at the headwaters but become ephemeral downstream due to natural conditions (e.g., losing streams) or due to anthropogenic alterations (e.g., water withdrawals). Such perennial or intermittent waters would not be jurisdictional." EPA Analysis at 11. New Mexico's traditional navigable waters include only the mainstems of the Rio Grande, Canadian, Pecos, Gila, and San Juan rivers. All of these rivers are fed by intermittent and ephemeral streams that will be left out of federal protections under the new rule. As such, the new rule, if implemented, risks widespread and severe contamination in those rivers, leading to contaminated drinking water, despoiled recreation waters, and imperiled wildlife refugia. The EPA also notes that out of 24,800 oil production wells in the Upper and Lower Pecos watersheds, 3,460 may escape CWA protection under the new rule. EPA Analysis at 192-3. New Mexico is experiencing an unprecedented oil and gas boom in the Permian Basin with as-yet unknown environmental repercussions, including unknown impacts to ground and surface waters. Withdrawing Clean Water Act protection from thousands of wells in the midst of that boom risks widespread and permanent environmental damage.

New Mexico does not have primacy under the Clean Water Act to oversee the state's NPDES program. Even if the state Legislature were to authorize New Mexico to administer the Clean Water Act, that could not happen until the Legislature's next full session in 2021. A regulatory void could pose swift and drastic consequences. For example, the city of Santa Fe—the state capital and a world-renowned tourist destination—relies for its drinking water on surface water via the Buckman Diversion. The Diversion is downstream from Los Alamos Canyon, which includes intermittent and ephemeral stretches not likely to be protected under the proposed rule. The Canyon receives water from several waste sites at Los Alamos National Labs (LANL), particularly via ephemeral channels during storm events. Long-term waste cleanup efforts are likely to generate additional discharges. The withdrawal of CWA protection would remove the only enforcement tool currently in place to regulate LANL discharges into the Canyon, and consequently into Santa Fe's drinking water. This is not an isolated scenario. In sixteen out of New Mexico's 33 counties, 75 to 100 percent of the population relies on drinking water from ephemeral, intermittent, or headwaters streams. That includes an estimated 280,000 people, nearly 10 percent of the state's population.

See Joseph W. Kane and Robert Puentes, "What the New Clean Water Rule Means for Metro Areas." The Brookings Institution (June 10, 2015), available at https://www.brookings.edu/blog/the-avenue/2015/06/10/what-the-new-clean-water-rule-means-for-metro-areas/. As for groundwater, the EPA states that "[e]phemeral streams in arid and semi-arid areas … play an important role in replenishing groundwater in the arid West, which people in the study area heavily depend on for irrigation and drinking water[.] One of the major sources of regional groundwater in the Rio Grande, for instance, is seepage from the Rio Grande, the Rio Puerco, and from the ephemeral Abo and Tijera Arroyos." EPA Analysis at 195 (internal citations omitted). But even while acknowledging that increased pollution can lead to higher drinking water treatment costs, EPA Analysis at 212, the EPA has not specifically analyzed these costs with respect to the proposed rule in New Mexico.

New Mexico's diverse habitats—from alpine tundra, forested mountains, grasslands, wetlands, rivers and lakes, to sandstone canyons and Chihuahuan desert—support some 525 species of birds, 300 species of butterflies and a myriad of other animals, some of them entitled to Endangered Species Act protections. The state's best-known wildlife habitats include the Bosque Del Apache National Wildlife Refuge along the Rio Grande and the Gila River, one of the few remaining undammed, free-flowing rivers in the United States and the only one in New Mexico.

According to Bureau of Land Management statistics, New Mexico's BLM lands alone saw 180,112 hunting visits, 68,895 wildlife-watching visits, and 48,221 fishing visits in 2016, generating $24 million in salaries and wages, $84 million in sales, $5 million in state and local tax revenue, and $6 million in federal tax revenue. Wildlife-dependent tourism is one of the chief drivers of the state's economy, and the state's wildlife relies on the state's waters, jurisdictional and non-jurisdictional. Ephemeral waterways in particular support the majority of New Mexico's wildlife, and yet those benefits are not adequately considered in the analysis by the Agencies underlying the proposed rule. Additionally, a recent geospatial analysis by St. Mary's University predicted that up to 80 percent of wetlands in the Cimarron Watershed will be left unprotected under the new rule. St. Mary's University, Modeling Federally Protected Waters and Wetlands (2019), available at http://smumn.maps.arcgis.com/apps/Cascade/index.html?appid=f3de6b30c0454c15ac9d3d881f18ae33&fbclid=IwAR2_Dp-7KSztGcP_oEFvxSrq72wnt804F8b8LRlE0POcHVSaeTKoPsb6wdA. More information is needed to determine the degree to which wetlands in the state's other watershed—and the waterways downstream—will be left vulnerable by the withdrawal of federal protections.

New York

DECLARATION OF PATRICIA RIEXINGER

PATRICIA RIEXINGER, under penalty of perjury, declares as follows:

1. I have 40 years of professional experience working with wetlands and water resource conservation. I submit this declaration to demonstrate the State of New York's strong interests in the protections afforded by the federal Clean Water Rule, and the harms to wetlands and waters in New York resulting from the loss of those protections if the Proposed Revised Definition of "Waters of the United States" (hereinafter "Proposed Replacement Rule" is adopted.

I. Summary

2. The Clean Water Rule improved protections to the Nation's waters. It replaced many of the uncertain protections for water under predecessor regulations by EPA and the Army Corps of Engineers with clear and more protective bright-line standards. The adoption of the Proposed Replacement Rule will likely cause many tributaries and many acres of riparian and floodplain wetlands in New York to lose their status as protected jurisdictional waters of the United States as compared to the Clean Water Rule or its predecessor regulations. Those waters would be subject to increased development pressure and to unregulated alteration, therein putting the waters, health, safety, welfare and economic interests of New Yorkers at risk of significant harm, and forcing the State to devote additional resources to protect its waters.

II. Personal Background and Experience

3. I have 40 years of professional experience in the field of wildlife and habitat conservation, primarily through direction and implementation of New York State wetlands and species protection programs. I am a Certified Wildlife Biologist, having passed through the peer-

reviewed Certification of Professional Wildlife Biologists Program of The Wildlife Society. I received the National Wetlands Award for leaders of outstanding state programs from the Environmental Protection Agency and Environmental Law Institute, and the Exemplary Achievement Award for state wetland programs by the U.S. Fish and Wildlife Service. I hold a B.S. in Wildlife Biology from Cornell University and an M.S. in Biodiversity Conservation and Policy from the University of Albany.

4. For 24 years, I was the Freshwater Wetland Program Manager for the New York State Department of Environmental Conservation (DEC). In this position, I developed, coordinated and administered the state's wetlands regulations, guidance documents, field manuals, policies and protocols. I oversaw and participated in the mapping and classification of state-jurisdictional wetlands. I represented the state on multiple interstate and national boards, including as co-chair with federal agencies on developing the *National Fish, Wildlife and Plant Climate Adaptation Strategy* (2013); as chair of the Association of Fish and Wildlife Agencies' Climate Change Committee; and as chair of the Lake Champlain Interstate Fish and Wildlife Coordinating Committee. I also provided assistance to localities, landowners, and the public on wetland protection. Prior to this, I served as a state Biologist and Endangered Species Specialist during which time I helped to develop a standardized set of criteria for listing state endangered and threatened species.

III. The importance of headwater streams and riparian and floodplain wetlands to New York

5. Clean and viable water resources are critically important to New York and its citizens. Rivers, lakes, ponds, streams, coastal bays, and the wetlands that support them, provide drinking water; enable agriculture and manufacturing; provide food through fishing, shell-

fishing, aquaculture and hunting; support a rich biodiversity of life; provide for tourism and recreation; and provide a healthy and positive quality of life in New York.

6. Headwater streams are the smallest channels of a river network, where stream flows begin. Although individual headwater streams have the smallest drainage areas and shortest average stream lengths, they are abundant – cumulatively making up the majority of river miles in the United States. Headwater streams can be "perennial" streams, which typically have flowing water year-round, or "intermittent" or "ephemeral" streams, which have flowing water seasonally or in response to precipitation, respectively.[1]

7. In their scientific review for the Clean Water Rule, EPA and the Army Corps found that headwater streams have numerous important physical, chemical and biological connections with downstream waters, and that these connections "are fundamental to the structure and function of river networks."[2] For example, headwater streams serve as sources of water, cumulatively contributing an estimated 60% of the total volume of mean annual water flow to all northeastern streams (Alexander, *et al,* 2007).

8. Biological processes in headwater streams reduce pollutant loading to downstream waters, thereby improving water quality. Biological processes in headwater streams also support biological activity throughout the river network, and provide critical habitat for stream and terrestrial invertebrates and fish. In New York, diadromous fish species, including many species of salmon and the American eel, migrate from Great Lake and marine environments to headwater streams, including intermittent streams, to spawn. (Erman and Hawthorne, 1976; Schrank and Rahel, 2004; Ebersole et al., 2006; Wigington et al., 2006; Colvin

[1] Connectivity Report 2-14

[2] Connectivity 3-1

et al., 2009). Brook trout also move between larger rivers and smaller tributary habitats over their life cycles to seek cold water and spawning habitat. (Kanno et al. (2014)

9. Riparian areas are those lands that occur adjacent to a waterbody, including the bed, banks, and immediate floodplains. They serve as transition zones between the terrestrial and aquatic ecosystem. As such, riparian areas are characterized by unique soils, vegetation, and habitat that are all dependent on the nearby presence of water, and which in return support those aquatic resources.[3] In their extensive scientific review for the Clean Water Rule, the EPA and Army Corps found that wetlands located in riparian and floodplain areas are highly connected to streams and rivers through the bidirectional flow of surface water and ground water.[4] Because New York has such an extensive network of rivers and streams, these riparian and floodplain wetlands are similarly extensive and consequently are critical components of the overall network of water resources in the State.

10. In support of its finalization of the Clean Water Rule, EPA and the Army Corps found that the scientific literature "clearly shows that wetlands and open waters in riparian areas and floodplains are physically, chemically, and biologically integrated with rivers via functions that improve downstream water quality."[5] Riparian and floodplain wetlands protect downstream water quality by serving to retain or detain water during heavy rainfalls and snowmelts, thus slowing the downstream passage of water, including sediment and contaminants, and mitigating conditions that could otherwise negatively impact downstream waters.[6] In addition to storing

[3] http://articles.extension.org/pages/62490/what-is-a-riparian-area

[4] Connectivity of Streams & Wetlands to Downstream Waters: A Review & Synthesis of the Scientific Evidence. ("Connectivity Report"). U.S. Environmental Protection Agency – Office of Research and Development, Washington D.C. Publication No. EPA/600/R, January 2015, at p.4-39.

[5] Ibid. p. ES-2.

[6] Ibid. p. 4-7.

storm waters, EPA and the Army Corps found that riparian and floodplain wetlands can serve to improve water quality throughout the year.[7] For example, one study reported that a floodplain wetland retained, 15.2, 13.7, and 14.2% of the solids, total nitrogen, and total phosphorus fluxes, respectively, from the watershed. Riparian areas have been shown to remove 80−90% of sediments leaving agricultural fields.

11. Riparian and floodplain wetlands also serve as integral components of river food webs, and provide unique and integral habitat for many species, including fish, amphibians, reptiles, and birds.[8] In 2015, New York updated its federally-required State Wildlife Action Plan in which it identified 166 "High Priority Species of Greatest Conservation Need" that are experiencing population declines and require conservation actions in the next ten years.[9] Thirty-seven percent of those species identified depend on aquatic habitats and are threatened by loss of water quality and loss of aquatic habitat. The water quality and habitat benefits provided by riparian and floodplain wetlands are therefore critical to preventing further declines in these aquatic species in the State.

[7] Ibid pp. 4-11, 4-12, 6-4. The Connectivity Report analyzed several previous studies on water quality benefits from riparian and floodplain wetlands, including: Johnston, C. A. 1991. Sediment and nutrient retention by freshwater wetlands: Effects on surface water quality. Critical Reviews in Environmental Control 21:491-565; Johnston, C. A. 1993. Material fluxes across wetland ecotones in Northern landscapes. Ecological Applications 3:424-440; Cooper, A., J. W. Gilliam, R. B. Daniels, and W. P. Robarge. 1987. Riparian areas as filters for agricultural sediment. Soil Science Society of America Journal 51:416-420; Daniels, R. B., and J. G. Gilliam. 1996. Sediment and chemical load reduction by grass and riparian filters. Soil Science Society of America Journal 60:246-251; Naiman, R. J., and H. Decamps. 1997. The ecology of interfaces: Riparian zones. Annual Review of Ecology and Systematics 28:621-658.

[8] Ibid pp. ES-3, 4-15, 6-4; Boltz, J. M., and R. R. J. Stauffer. 1989. Fish assemblages of Pennsylvania wetlands. Pages 158-170 in Wetland ecology and conservation: Emphasis in Pennsylvania. S. K. Majumdar, editor. The Pennslyvana Academy of Sciences, Lafayette College, Easton, PA.

[9] Available at: https://www.dec.ny.gov/docs/wildlife_pdf/swapfinaldraft2015.pdf.

12. The benefits that accrue to New York from healthy streams, ponds, rivers and their associated wetlands include the economic and social benefits associated with fishing, hunting and wildlife-related recreation such as photography and birdwatching. All fish and wildlife in New York "are owned by the State, and held for the use and enjoyment of the people of the State…"[10] The U.S. Fish and Wildlife Service's National Survey of Fishing, Hunting and Wildlife-Associated Recreation[11] reports that people spent $2 billion annually on fishing alone in New York. This included contributions and expenditures from over 1.6 million State residents and 297,000 non-residents who spent almost 30 million days fishing in NY. Another $4 billion was spent on wildlife related recreation, including expenditures from over ¼ million non-residents.

13. New York ranks second in the nation in angler expenditures and sixth as a fishing destination for out-of-state visiting anglers. This is an important economic driver for many rural communities in New York and functions within the interstate commerce paradigm of the Clean Water Act. In recognition of the social and economic value of fishing, New York has for decades invested in purchasing over 1,280 miles of Public Fishing Rights on more than 350 streams across the state. The DEC manages over 395 boating and fishing access facilities and operates 12 fish hatcheries statewide. Fishing continues to grow as an outdoor activity, contributing to the economic and social well-being of New Yorkers.

[10] New York Environmental Conservation Law §15-0103(8).

[11] U.S. Department of the Interior, U.S. Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau. 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation.

IV. New York's programs to preserve, protect and conserve waters and wetlands

14. Being part of the glaciated northeast, New York is a water-rich state. Over 70,000 miles of rivers and streams drain seventeen major watersheds, supplying major interstate and international river systems including the Delaware, Susquehanna, Allegheny, Niagara, Mohawk, St. Lawrence and Hudson Rivers. New York has over 7,500 lakes, ponds, and reservoirs, and over 2,000 miles of coastal shoreline along the Great Lakes, Long Island Sound, and the Atlantic Ocean. In addition, the United States Geological Survey estimates that New York has about 2.4 million acres of wetlands,[12] and New York has 25,000 acres of tidal wetlands as well.[13]

15. New York has long recognized the many values that wetlands provide in the State. The DEC has purchased and protects over 110 Wildlife Management Areas ("WMAs") statewide, managing them actively for wildlife and recreation, but also for flood protection for local communities, and for water quality benefits.[14] Recently, the DEC committed an additional $10 million of federal and state dollars to expand its network of WMAs to buy additional habitat, including wetlands.

16. In addition, New York protects the integrity of its water resources through the New York Environmental Conservation Law ("ECL") Articles 15 (stream disturbance and water withdrawal), 17 (pollution discharges to water), 24 (freshwater wetlands protection), and 25 (tidal wetlands protection),[15] These statutes together with their implementing regulations protect

[12] See supra note 7.

[13] See: http://www.dec.ny.gov/about/865.html.

[14] See: https://www.dec.ny.gov/outdoor/7768.html.

[15] *See, e.g.* ECL §§ 15-0105, 17-0103, 24-0103, 24-0105, and implementing regulations at 6 N.Y.C.R.R. Parts 608, 663-664, 700-706, and 750.

the State's water resources, including water chemistry and biological functions, and the wetlands and riparian lands that support those functions.

17. New York implements ECL Article 15 to conserve and protect its water resources for the benefit of all residents of the State. In adopting its Water Resources Law, the New York legislature recognized the importance of maintaining the purity and quality of state waters consistent with public health and safety, public enjoyment, protection of fish and wildlife species, and economic development. The statute and its implementing regulations require the State to classify waters in accordance with their best usage, and adopt standards applicable to those classifications.[16] New York has classified thousands of waters according to their best usage and has codified those classifications into state regulation. Waters classified for use as a source of drinking water, culinary or food processing purposes, swimming and other contact recreation, and for supporting trout fisheries are referred to in state regulations as "protected." Certain activities that might disturb the bed and banks of a protected water, such as constructing a bridge, would be subject to state regulation.[17]

18. New York implements ECL Article 24 to preserve, protect and conserve wetlands and the benefits they provide, consistent with the beneficial social, economic and agricultural development of the state. In adopting its Freshwater Wetlands Act, the New York legislature found that wetlands provide numerous benefits, including flood and storm control, wildlife habitat, protection and purification of surface and subsurface waters, erosion control, recreation and open space.[18] The statute and its implementing regulations require the State to inventory, map, and regulate activity in and around freshwater wetlands of 12.4 acres (5 hectares) or larger

[16] 6 N.Y.C.R.R. Part 701
[17] 6 N.Y.C.R.R. §§ 180.5, 701.25
[18] ECL § 24-0103.

in size and any smaller wetlands determined to be of "unusual local importance." Around every protected wetland is an "adjacent area" of 100 feet that is also regulated to provide protection for the wetland.[19] Similarly, the Legislature adopted Article 25 of the ECL to protect tidal wetlands for the benefits they provide to New York.

V. New York's Reliance on the Clean Water Act

19. Many ephemeral and intermittent waters that are unclassified under ECL Article 15 generally receive protection only if those waters are determined to be a jurisdictional water of the United States under the Clean Water Act. New York regulations assign protected status to perennial (continuously flowing) tributaries to protected streams.[20] For unclassified intermittent and ephemeral tributaries to protected streams, however, New York regulations do not assign protected status. Applicants proposing to undertake certain activities in those tributaries not subject to ECL Article 15 are required to obtain a permit under Section 404 of the Act. To be valid, these permits require that the State issue a Section 401 Water Quality Certification to ensure that the discharge allowed under the Section 404 permit meets State water quality standards. Wherever an Article 15 permit is authorized by the State, it serves as the Section 401 water quality certification to validate the Section 404 federal permit. Absent a State Article 15 permit, an individual Section 401 certification is required for a Section 404 permit to be issued, except if blanket-authorized by the Army Corps of Engineers as part of a nationwide permit.

20. Wetlands in New York that are not protected under ECL Article 24 generally receive protection only if the wetlands are determined to be a jurisdictional water of the United States under the Clean Water Act. Applicants proposing to undertake certain activities in such

[19] ECL § 24-0301(1).

[20] See for example 6 NYCRR Sec.815(4)(h)

wetlands are required to obtain a permit under Section 404 of the Act. To be valid, these permits require that the State issue a Section 401 Water Quality Certification to ensure that the discharge allowed under the Section 404 permit meets State water quality standards. Wherever an Article 24 permit is authorized by the State, it serves as the Section 401 water quality certification to validate the Section 404 federal permit. Absent a State Article 24 permit, an individual Section 401 certification is required for a Section 404 permit to be issued, except if blanket-authorized by the Army Corps of Engineers as part of a nationwide permit.

21. Only about half of the 2.4 million acres of wetlands in New York – approximately 1.25 million acres – are freshwater wetlands subject to New York State regulation.[21] Thousands of small wetlands often found in headwater, riparian, and floodplain settings, are not mapped and protected by state law. Further, many are not adjacent to streams that are protected by New York law, so they receive no state protections. Consequently, New York depends on the Clean Water Act to protect the functions provided by the many wetlands that occur in the floodplains and riparian waters in the state.

22. When tributaries and riparian and floodplain wetlands lose their status as jurisdictional waters of the United States, they also lose protection under Section 401 of the Clean Water Act. The State uses their authority to review, approve, condition or deny a Water Quality Certification for federally permitted projects to protect best usages of its waters. Constricting federal jurisdiction on state waters not only removes federal oversight of proposed projects in those waters, but it can also deny state oversight of those disturbances through the water quality certification process. When this occurs in waters for which the state does not

[21] http://www.dec.ny.gov/docs/wildlife_pdf/wetstats4.pdf.

otherwise have jurisdiction, there are no longer any constraints on potentially negative impacts to the best usages of the State's waters.

23. Because watersheds cross state boundaries, New York relies on the federal government to maintain nationwide water quality protections. New York shares watersheds and waterbodies with neighboring states in the Delaware River basin, Susquehanna River basin, Allegheny River basin, Lake Champlain basin, the Great Lakes system, and the Long Island Sound, among others. Without the strong protections of the Clean Water Act, New York could lose the water quality and habitat benefits of certain streams and riparian and floodplain wetlands through inadequate protections in upstream states, placing the State's waters and wildlife species at risk. Conversely, loss of water quality in New York can adversely affect downstream areas. For example, Federal, state, and conservation organizations in Maryland, Virginia, and Delaware have a strong interest in the conservation of wetlands in the agriculturally-dominated headwaters of the Susquehanna River in New York because of their importance to the water quality of the ultimate receiving water – the Chesapeake Bay.[22]

[22] https://www.epa.gov/nutrient-policy-data/addressing-nutrient-pollution-chesapeake-bay.

VI. Injuries to New York from Adoption of the Proposed Replacement Rule

24. Adoption of the Proposed Replacement Rule would eliminate ephemeral streams from the Act's protections, and increase uncertainty in the Act's protections of riparian and floodplain wetlands, putting at risk their associated water quality, floodwater storage, habitat, recreational, and other benefits that are so critically important to the citizens and economy of New York. The Proposed Replacement Rule would no longer designate ephemeral streams as jurisdictional waters of the United States. The Proposed Replacement Rule also no longer designates express jurisdiction to waters in the 100-year floodplain and 100-foot riparian corridor, making it likely that fewer wetlands and other waters in those sensitive areas would be protected.[23] In order to compensate for the loss of these federal protections, the State would face the need for additional regulatory programs, which would entail the expenditure of state resources and additional work by state personnel to develop, implement, and enforce such programs. If sufficient resources are not available, this could require reduced efforts in other critical programs that protect the health, safety and welfare of the State's citizens.

Patricia Riexinger

Dated: April 12, 2019
Albany, New York

[23] "Economic Analysis of the EPA-Army Clean Water Rule," May 20, 2015, pp. 9, 13, available at https://www.epa.gov/sites/production/files/2015-06/documents/508-final_clean_water_rule_economic_analysis_5-20-15.pdf.

DECLARATION OF WILLIAM NECHAMEN

WILLIAM NECHAMEN, under penalty of perjury, declares as follows:

1. I am an expert in the fields of water resources and floodplain management and have many years of professional experience working in those areas. I submit this declaration to demonstrate the State of New York's strong interests in the protections afforded under existing law by the federal Clean Water Rule, and the likely harms resulting from the loss of those protections if the proposed revised definition of the Waters of the United States (hereinafter "Proposed Replacement Rule") is adopted.

I. Summary

2. Wetlands and other waters (such as ponds and lakes) that are located in floodplains play a very important role in mitigating flooding because of their ability to store floodwaters and dissipate floodwaters' destructive energy. Hundreds of thousands of state residents and hundreds of millions of dollars in property owned by New York State are located within flood-prone areas. If the Proposed Replacement Rule is adopted and a significant number of floodplain wetlands, and some ponds, and lakes lose their protected status as waters of the United States, as the EPA and Army Corps have indicated. Those waters would be subject to increased filling, resulting in more polluted downstream waters, more damaging floods, and increased State costs in responding to floods.

II. Personal Background and Experience

3. I have 35 years of professional experience in the field of water resources management, with an emphasis on protection of people and property from flooding. I am currently Principal of Nechamen Consultants, LLC, which provides training and floodplain

management expertise to a number of clients. I am the policy committee co-chair and former Chair of the New York State Floodplain and Stormwater Managers Association, a statewide professional organization representing about 500 members. From 2013 to 2015, I was Chair of the Association of State Floodplain Managers (ASFPM), a nationwide professional association representing over 15,000 members. I am a Certified Floodplain Manager, having met the requirements that the ASFPM developed in collaboration with the Federal Emergency Management Agency (FEMA), and I maintain that certification through continuing education.

4. From 2001 to 2017, I was Chief of Floodplain Management for the New York State Department of Environmental Conservation. In that capacity I was responsible for working with FEMA, New York State agencies, and local municipalities to make sure that development in floodplains was done in a manner that minimizes flood risk. Among other things, I helped the New York Department of State Codes Division to develop more stringent building code requirements in flood zones. I also supported the work of the New York State Office of Homeland Security and Emergency Services and the New York Governor's Office of Storm Recovery with respect to flood mitigation activities.

III. Flood Risk Management in New York State

5. Historically New York State communities first developed along rivers and coastlines. As a result, approximately 733,000 state residents reside within mapped FEMA 100-year floodplains. These floodplains are defined to consist of land areas adjacent to waterbodies that FEMA estimates have a one-percent chance of flooding in any given year. New York State is also owner of many landholdings and improvements in 100-year floodplains, including buildings, roads, and bridges.

6. Flooding is the primary natural hazard in New York State. Federal flood disasters have been declared in every one of New York's 62 counties. Between 1960 and 2012, there were 3,312 documented events causing flood damage in New York, resulting in $3.8 billion in direct federally reimbursed damages to the State, not counting Superstorm Sandy which hit New York in 2012.[1] Sandy alone resulted in 53 deaths and at least $30 billion of damages in New York.[2]

7. Flooding in New York has become routine, persistent and devastating. Since 2004 alone, New York has suffered at least 14 floods that were determined to be at least 100-year floods in some part of the State. Record floods have occurred in parts of the Delaware River, Mohawk River, Upper Hudson River, Finger Lakes, Susquehanna River, Lake Erie, Lake Ontario, and Lake Champlain basins, as well as in coastal areas. In 2011, spring runoff caused Lake Champlain to hit water level elevations not previously recorded in over 150 years of gage records. Later that year, tropical systems Irene and Lee brought record flooding to large areas of New York, including parts of the Mohawk and Susquehanna Basins that had experienced a previous 100-year plus event in 2006. Superstorm Sandy in 2012 brought record coastal flooding to New York communities. In 2017, portions of the Lake Ontario watershed experienced record-breaking rainfall, and Lake Ontario elevations exceeded 100-year flood elevations.

8. Flooding harms lives and property in flood prone areas and requires the commitment of State emergency response resources. For example, swift-water or air-rescue teams rescued over one thousand state residents during the flooding caused by Hurricane Irene and Tropical Storm Lee. New York State committed extensive emergency resources in response

[1] 2014 New York State Hazard Mitigation Plan. New York State Department of Homeland Security and Emergency Services. January, 2014, p. 3.9-31.

[2] FEMA expenditures in New York State totaled $14.8 billion (www.fema.gov). US HUD expenditures totaled $7 billion (HUD Archives News Release, HUD # 13-153, 10/28/13). Total insurance payments in New York State totaled $8.3 billion, including National Flood Insurance payments, and private auto, homeowner, and commercial property insurance. Hurricane Sandy: Rebuilding Task Force: Hurricane Sandy Rebuilding Strategy, August 2013.

to the storms, including: deploying 1,700 State Police and 3,200 National Guard members, opening 200 shelters to house 18,000 citizens, and staffing 74 Disaster Recovery Centers to assist citizens during the recovery period.[3] The storms closed 400 road segments and bridges and required repairs at 945 locations on the State highway system. In total, the two storms caused $297 million in flooding-related costs incurred among the various state transportation, canal, mass transit and bridge authorities, and a significant portion of these costs were not eligible for federal reimbursement.

9. Flooding also harms public health and the environment in New York State. Flooding increases water pollution by carrying into waterways runoff from land areas containing road oils, salts, farm and lawn chemicals, pesticides, metals and other pollutants. Flooding has also inundated and/or overloaded New York wastewater treatment plants, causing raw sewage to enter waterways. Floodwaters contaminated by these pollutants can inundate communities within the floodplain, impairing potable public and private water supplies, and rendering cleanup more hazardous. Contaminated floodwaters can also impede other water uses including swimming, beach-going, and fishing. The U.S. Secretary of Health and Human Services issued Public Health Emergency Declarations in New York following Hurricane Sandy and Tropical Storm Lee because of some of those post-flood conditions.[4]

10. The primary method by which New York's communities (and others across the country) mitigate the harm from flooding is by managing human activity in the mapped floodplains pursuant to the National Flood Insurance Program. Local municipalities agree to participate in the National Flood Insurance Program by adopting FEMA Flood Insurance Rate

[3] New York State Responds – Hurricane Irene and Tropical Storm Lee: One Year Later. August 2012. Available at: https://www.governor.ny.gov/sites/governor.ny.gov/files/archive/assets/documents/Irene-Lee-One-Year-Report.pdf

[4] https://www.phe.gov/emergency/news/healthactions/phe/Pages/default.aspx

Maps developed specifically for their communities and by passing and enforcing regulations governing development in the mapped floodplains. FEMA's Flood Insurance Rate Maps establish regulatory flood elevations and geographic extents of floods. For regulatory purposes, FEMA maps the portion of the floodplain that has a one-percent chance of flooding annually, which, as discussed earlier, is called the 100-year floodplain.

11. FEMA delineates the 100-year floodplain using accepted engineering models, including those developed by the U.S. Army Corps of Engineers - Hydrologic Engineering Center. The United States Geological Survey (USGS) has developed mathematical models using regression equations to estimate stream or river flows at specific locations, and FEMA uses the output from those USGS regression equations in many of its floodplain modeling and mapping studies. A key variable used in the USGS equations is total water storage, which is the percentage of the drainage area covered by lakes, ponds or wetlands on USGS topographical maps. The USGS has verified on multiple occasions that storage from these waters is a significant variable in its regression equations because of their capacity to store water and reduce downstream flood velocities.[5,6]

IV. Role of Floodplain Waters in Flood Risk Management

12. Floodplains are low-lying areas, that often include wetlands, ponds and lakes, located adjacent to rivers and shorelines that are subject to flooding. The natural functions of these floodplain waters include providing biological habitat, maintaining water quality though pollution filtering, and attenuating floods. In their scientific review for the Clean Water Rule, the

[5] Roland, M.A., and Stuckey, M.H., 2008, Regression equations for estimating flood flows at selected recurrence intervals for ungaged streams in Pennsylvania: U.S. Geological Survey Scientific Investigations Report 2008-5102.

[6] Lumia, Richard, Freehafer, D.A., and Smith, M.J., 2006, Magnitude and Frequency of Floods in New York: U.S. Geological Survey Scientific Investigations Report 2006–5112.

EPA and Army Corps found that floodplain wetlands and open waters along rivers and streams protect downstream lands from flooding by storing and slowing floodwaters so that they arrive downstream gradually. Wetlands protect water quality by retaining large volumes of stormwater, sediment and contaminants in runoff that could otherwise negatively affect downstream waters.[7] The specifics of these floodplain wetland benefits vary by watershed, but their value is undisputed.

13. A detailed study that was published in 2016 after the Clean Water Rule was finalized provides a clear example of the value of wetlands in attenuating floods.[8] Hurricane Irene devastated parts of upstate New York and much of Vermont in 2011. The storm presented researchers with an opportunity to quantify the value of floodplain wetlands located along Otter Creek in Vermont. Otter Creek's floodplain wetlands are located in between the upstream community of Rutland and the downstream community of Middlebury. The creek ultimately flows into Lake Champlain, a waterbody shared by New York and Vermont.

14. During the storm, researchers found that the floodplain wetland system on Otter Creek reduced flows by a factor of 2.5. The upstream gage near Rutland is at a location in which the contributing watershed area is 307 square miles. The downstream gage, near Middlebury, is at a location that drains 628 square miles. Yet, despite this much-larger drainage area, peak flows at the downstream gage after Irene were 2.5 times less than the flow measured at the upstream gage. This was directly due to the capability of the floodplain wetlands along Otter Creek to store and hold overbank floodwaters and release them gradually over time.

[7] Connectivity of Streams & Wetlands to Downstream Waters: A Review & Synthesis of the Scientific Evidence.("Connectivity Report") U.S. Environmental Protection Agency – Office of Research and Development, Washington D.C. Publication No. EPA/600/R, January 2015, at p. ES-2.3.

[8] Quantifying flood mitigation services: The Economic Value of Otter Creek Wetlands and Floodplains to Middlebury, VT, Keri B. Wilson et al, Ecological Economics 130, 2016.

15. The study concluded that Otter Creek's floodplain wetlands reduced Irene-related flood damages in Middlebury by between $526,000 and $1.8 million and reduced flood heights by five to eight feet, representing an 84% to 95% reduction in flood damages at Middlebury. The authors then analyzed more frequent and less severe floods in the watershed and calculated the average savings from the presence of the floodplain wetlands to be $126,000 to $459,000 per year.

16. In promulgating the Clean Water Rule, EPA found ample scientific evidence that floodplain wetlands retained large volumes of stormwater, sediment and other contaminants, and thereby attenuated flooding that could otherwise negatively affect the condition or function of downstream waters. EPA's review of the wetland literature found that in 23 of 28 studies, wetlands reduced or delayed downstream flooding.[9] These findings included a study of the Cache River in Arkansas that found peak river flows between upstream and downstream water gages were reduced by 10–20% primarily due to floodplain water storage. Another study performed in Ohio found that 22 floodplain wetlands stored an average of 0.8 acre-foot to 1.2 acre-feet of water per acre of wetland, and that wetlands had capacity to store approximately 40% of the daily flow of small streams. As noted in an EPA-cited study, wetlands providing these types of 'ecosystem services'[10] help local economies avoid costs "both in terms of damages

[9] See supra note 7, pp. ES-9, 2-21, 4-7, 6-4. The "Connectivity Report" analyzed numerous previous studies including Bullock and Acreman, "The Role of Wetlands in the Hydrologic Cycle," Hydrology and Earth Science Systems, 7(3), 358-389, 2003; Hydrology of the black swamp wetlands on the Cache River, Arkansas, Raymond Walton et al, Wetlands – Official Scholarly Journal of the Society of Wetland Scientists, Volume 16, Issue 3, September 1996; and An Ecological and Functional Assessment of Urban Watersheds in central Ohio, Gamble, D.E. et al, Ohio Environmental Protection Agency, 2007.

[10] "Ecosystem goods and services produce the many life-sustaining benefits we receive from nature—clean air and water, fertile soil for crop production, pollination, and flood control. These ecosystem services are important to environmental and human health and well-being, yet they are limited and often taken for granted." Captured from Environmental Protection Agency website March 13, 2018: https://www.epa.gov/eco-research/ecosystem-services

from floodwaters and from degradation of recreation and drinking waters from entrained pollutants."[11]

17. Coastal wetlands, often called marshes, have a measurable role in decreasing coastal storm damage. Coastal ecosystems work during storms by reducing wave energy. Waves carry floodwaters inland. Coastal marshes provide drag and friction against the waves helping to knock them down and reduce the height and geographical extent of inland flooding. The wave energy is dissipated before it has a chance to reach inland structures.

18. A detailed peer-reviewed study on the role of coastal wetlands in reducing damages from Superstorm Sandy was published in 2017.[12] The study utilized coastal hydraulic engineering, detailed damage surveys, and wetlands mapping to run a "with and without" analysis to compare the impact of coastal wetlands on damages from floods. The study concluded that coastal wetlands saved $625 million in direct damages from Sandy across multiple states by reducing wave heights and velocity. In New York, estimated damages avoided totaled $138.2 million. In addition to damages to structures, wetlands in New York saved 188 miles of primary and secondary roads from further damage. The protection of those roads was not included in the $138.2 million figure.

19. The Clean Water Rule demonstrated – based on peer-reviewed scientific studies and practical experience – that upstream waters, including headwaters, non-floodplain wetlands, floodplain wetlands, and other waters protected under the Clean Water Rule significantly affect the chemical, physical, and biological integrity of downstream waters by playing a crucial role in

[11] Lane, C. R., and E. D'Amico. 2010. Calculating the ecosystem service of water storage in isolated wetlands using LiDAR in north central Florida, USA. Wetlands 30:967-977.

[12] The Value of Coastal Waters for Flood Damage Reduction in the Northeastern USA, Siddarth Narayan et al, Scientific Reports 7, Article 9463, August 2017.

controlling sediment, filtering pollutants, reducing flooding, providing habitat for fish and other wildlife, and supporting many other vital chemical, physical, and biological processes. EPA estimated that implementing the 2015 Rule would result in indirect, incremental annual net benefits of between $339 to $572 million across multiple Clean Water Act programs, with a benefit to cost ratio above one.[13]

V. Removing Floodplain Wetlands and Other Waters from Jurisdiction Would Harm the State's Interests

20. Water conditions in New York are affected both by regulation of waters within the State, and by regulations applicable in other states, because water does not recognize political boundaries. In its adoption of the Clean Water Rule, EPA cited numerous scientific studies performed on interstate waters - waters that form part of a state boundary or originate from an upstream state and flow into a downstream state - to demonstrate a wide variety of connections between upstream and downstream waters.[14] New York shares numerous watersheds and waterbodies with neighboring states, including the Delaware River, Susquehanna River, Allegheny River, Lake Champlain, Great Lakes system, and the Long Island Sound. Water from upstream states feed waters within the State, affecting water quality in New York. While New York protects its waters through regulations applicable within the State, those regulations do not

[13] 80 Fed Reg., No 124, (June 29, 2015), p. 37,101.

[14] See supra note 7. The "Connectivity Report" analyzed numerous previous studies on interstate waters. including: Alexander, R. B., R. A. Smith, and G. E. Schwarz. 2000. Effect of stream channel size on the delivery of nitrogen to the Gulf of Mexico. Nature 403:758-761; Alexander, R. B., E. W. Boyer, R. A. Smith, G. E. Schwarz, and R. B. Moore. 2007. The role of headwater streams in downstream water quality. Journal of the American Water Resources Association 43:41-59; Collier, M., R. J. Webb, and J. C. Schmidt. 1996. Dams and rivers: A primer on the downstream effects of dams. USGS Circular 1126, U.S. Department of the Interior, U.S. Geological Survey, Reston, VA; Galster, J. C. 2007. Natural and anthropogenic influences on the scaling of discharge with drainage area for multiple watersheds. Geosphere 3:260-271; Wang, X., A. M. Melesse, M. E. McClain, and W. Yang. 2007. Water quality changes as a result of coalbed methane development in a rocky mountain watershed. Journal of the American Water Resources Association 43:1383-1399; Jacobson, L. M., M. B. David, and L. E. Drinkwater. 2011. A spatial analysis of phosphorus in the Mississippi river basin. Journal of Environmental Quality 40:931-941.

protect all the waters covered by the Clean Water Rule, and the State cannot control the regulations of other States.

21. The Proposed Replacement Rule removes federal jurisdiction over some wetlands and other waters in 100-year floodplains. This increases the likelihood that some formerly protected wetlands, and some ponds and lakes and will no longer provide flood attenuation and water quality benefits. The filling of such waters would result in increased erosion and impaired water quality and would impede uses of waters for drinking water, as habitat, and for water-based recreation.

22. The Clean Water Rule has express provisions protecting wetlands and other waters within 100-year floodplains, which under the previous (pre-2015) regulations was uncertain. In promulgating the Clean Water Rule, the agencies found that under the previous regulations "almost all waters and wetlands across the country theoretically could be subject to a case-specific jurisdictional determination" of uncertain outcome.[15] The agencies' economic analysis found that express inclusion of waters in the 100-year floodplain would increase the number of waters protected by the Act as compared to the agencies' practices under previous regulations.[16]

23. The Proposed Replacement Rule has no express protections for wetlands and other waters within 100-year floodplains and removes protections not only from the Clean Water Rule, but from many waters that were protected under the regulatory regime that preceded it. The Proposed Replacement Rule would only protect floodplain wetlands and waters if such waters

[15] 80 Fed. Reg. p. 37,054, 37,056.

[16] "Economic Analysis of the EPA-Army Clean Water Rule," May 20, 2015, pp. 9, 13, available at https://www.epa.gov/sites/production/files/2015-06/documents/508-final_clean_water_rule_economic_analysis_5-20-15.pdf.

"abut" or have a "direct hydrologic surface connection" to a jurisdictional water in a typical year.[17] These definitions explicitly exclude flood events that may overtop berm between a wetland and jurisdictional water. The result may be the filling of such wetlands eliminating their flood attenuation value, increasing downstream flooding. As proposed, a direct hydrologic surface connection can result from inundation "as a result of seasonal or permanent flooding, for example, so long as inundation occurs in a typical year and has at its source a jurisdictional water."[18] A typical year is defined as "within the normal range of precipitation over a rolling 30-year period for a particular geographic area."[19] The agencies presently consider a year to be typical "when the observed rainfall from the previous three months falls within the 30th and 70th percentiles established by a 30-year rainfall average," for a geographical area and "would generally not include times of drought or extreme floods."[20] Based on this definition, the Proposed Replacement Rule would not protect floodplain wetlands and other waters that would only retain and hold floodplain waters during higher magnitude flooding events above the 70th percentile. Nearly all damaging floods would fall above the 70th percentile. There are no maps that delineate a flood that meets definition of the 70th percentile during an average year, rendering field determination of a protected water body impossible. FEMA bases its Flood Insurance Rate Maps, which are the only official flood zone determination maps produced by the Federal government, on a flood that has a one-percent chance of being exceeded every year; quite different than the definition in the Proposed Replacement Rule. The proposed replacement rule defines a geographical area as a watershed, however, it does not indicate which watershed within the hierarchy would apply. The definition could theoretically include anything from a

[17] 84 Fed. Reg. p. 4184
[18] Ibid at p. 4186
[19] Ibid at p. 4185
[20] Ibid at p. 4177

small headwater watershed to the watershed of a major interstate river system, further confusing the basis of a typical flow. The proposed replacement rule therefore adds significant uncertainty while increasing flood risk.

24. In addition, the Proposed Replacement Rule would end the current practice in the 28 states where the Clean Water Rule has been temporarily enjoined of conducting case-specific "significant nexus" evaluations to relatively permanent and non-permanent waters.[21] Therefore, agency staff would no longer have discretion to protect floodplain wetlands and other waters that in their opinion provide flood mitigation and other ecosystem services unless those wetlands met the strict definition described above.

25. The Proposed Replacement Rule would have fewer protections for wetlands located adjacent to Traditional Navigable Waters when compared to existing or prior (pre-Clean Water Rule) regulation. In the supporting analysis, the agencies' determined that they were unable to quantify the effect that the Proposed Replacement Rule would have on adjacent wetlands when compared to the Clean Water Rule. However, the agencies were able to quantify the effect of the proposed rule on the pre-2015 regulatory regime which provided for fewer protections of wetlands and other waters, and in particular no express protections for floodplain wetlands and waters. In that analysis, the agencies reviewed a representative sample of 3,581 jurisdictional determinations on waters adjacent to Traditional Navigable Waters and estimated that approximately 40% were not abutting or did not have a direct hydrologic surface connection via a culvert or tide gate. Therefore, under the Proposed Replacement Rule, those 40% of wetlands would only be jurisdictional if they had a "direct hydrologic surface connection in a typical year". The agencies concluded that the Proposed Replacement Rule would result in

[21] Ibid at p. 4186

fewer jurisdictional wetlands when compared to the Clean Water Rule and the pre-2015 regulations.[22] Because there was no analysis of the size of the wetlands, it is impossible to determine the magnitude of wetland protections that may be lost.

26. The Proposed Replacement Rule would have fewer protections for wetlands located adjacent to Relative Permanent Waters when compared to existing or prior regulation. The agencies' supporting analysis included a review of 3,939 case-specific jurisdictional determinations made under the pre-2015 regulations on wetlands adjacent to, but not abutting Relatively Permanent Waters, and found that 97% of those wetlands had a significant nexus to those waters.[23] The Clean Water Rule has a broader definition of adjacent than the pre-2015 regulations. Therefore, the agencies concluded that fewer wetlands under this category would be jurisdictional under the Proposed Replacement Rule when compared to both existing and prior regulations.[24]

27. The Proposed Replacement Rule would have fewer protections for wetlands located adjacent to non-Relatively Permanent Waters when compared to existing and prior regulation. The agencies' proposed definition would not protect wetlands adjacent to ephemeral tributaries and wetlands that do not have a direct hydrologic surface connection to a jurisdictional water in a typical year. The agencies concluded that when compared to the Clean Water Rule or pre-2015 regulatory regime, fewer of these wetlands would be considered jurisdictional.[25]

28. The dredging and filling of floodplain wetlands and open waters along inland rivers would result in an increase in flood elevations, flood frequency and erosion in downstream

[22] Resource and Programmatic Assessment, p. 45.
[23] Ibid at p. 46.
[24] Ibid at p. 46
[25] Ibid at p. 46

areas. In tidal areas, loss of coastal wetland protections will directly lead to increased wave damages from tropical systems and other coastal storms. The National Weather Service estimates that between 1984 and 2014, floods caused on average nearly $8 billion in damages per year nationally (corrected for inflation), and over 80 fatalities per year.[26]

29. Increased dredging and filling of floodplain wetlands, ponds, and lakes, and the resulting loss in water storage capabilities, would decrease the accuracy of FEMA Flood Insurance Rate Maps adopted by communities located downstream, putting these communities and proximate State property at increased risk until FEMA updates the maps to reflect the loss in floodplain storage. Existing development will suffer increased risk even after FEMA Flood Insurance Rate Maps are updated.

30. Increased flood damages as a result of adopting the Proposed Replacement Rule will also increase taxpayer costs for flood-related disasters. Grants to the State from the FEMA Public Assistance Program made in the aftermath of flood disasters almost always require the State to fund a portion of the project. For example, in the aftermath of Hurricane Sandy, FEMA made 4,127 Public Assistance grants totaling nearly $10 billion to State and local governments for facilities damaged by the storm, including parks, beaches, marinas, water treatment plants, hospitals, schools, public housing and other public buildings. While FEMA grants to New York covered 90% of the eligible costs of such projects, the State was left responsible for covering the remaining 10 percent.[27] In responding to the flooding from Hurricane Irene and Tropical Storm

[26] National Oceanic and Atmospheric Administration, National Weather Service, Hydrologic Information Center – Flood Loss Data, available at http://www.nws.noaa.gov/hic/.
[27] https://www.fema.gov/news-release/2015/10/21/fema-aid-reaches-169-billion-new-yorks-hurricane-sandy-recovery

Lee, FEMA made approximately $870 million in Public Assistance grants in New York, leaving the State share at about $87 million.[28,29]

31. New York State owns State facilities located in mapped FEMA 100-year floodplains that are directly at risk from increased flooding due to the Proposed Replacement Rule. Of those structures, 658 have documented replacement values totaling $254,348,907.[30] Not quantified by dollar value are the number and miles of State-owned and/or managed roads, bridges, culverts, rail lines, airports and marine facilities located in flood zones, all of which are at increased risk of being damaged by flooding in the absence of the Clean Water Rule.

32. New York's state park holdings are rich in aquatic resources, including wetlands, rivers, streams and lakes. A number of those state parks receive waters from upstream states, including Alleghany State Park, Taconic State Park, Cumberland Bay and Point Au Roche State Parks, Riverbank State Park, and more than two dozen state parks along the shores of Lakes Erie and Ontario, which receives waters originating from seven Midwestern states.

33. Approximately 733,000 state residents live in mapped flood zones. Outside of New York City, private property in 100-year floodplains is valued at over $46 billion.[31] In New York City, private property within currently mapped 100-year floodplains is valued at over $58 billion, which could increase to $129 billion once draft updated flood maps covering larger

[28] https://www.fema.gov/disaster/4020

[29] https://www.fema.gov/disaster/4031

[30] https://mitigateny.availabs.org/risk/assetinventory

[31] New York State Standard Multi-Hazard Mitigation Plan, 2011, p. 3-82. Data excludes New York City, portions of Long Island and Westchester Counties, and 20 mostly rural upstate New York counties for which digital flood mapping data was not available at the time of the analysis. This data was not updated for the 2014 NYS Standard Multi-Hazard Mitigation Plan.

geographic areas are finalized.[32] Any loss of floodplain wetlands and other waters from adoption of the Proposed Replacement Rule would put these properties at further risk. The private losses would further disrupt the State's economy.

34. Flooding is caused by many factors beyond the control of EPA and the Army Corps of Engineers. The presence or absence of protective wetlands and other waters will not eliminate floods. But their diminishment will serve to make floods bigger and more frequent, cause floods to cover larger geographic areas, and increase flood damages and harm to the State of New York.

[32] Policy Brief, On the Frontlines: $129 Billion in Property At Risk from Flood Waters, Office of the Comptroller, City of New York, October 2014, p. 2.

VI. Conclusion

35. Based on my experience and expertise in the fields of water resources and floodplain management, and for the reasons discussed above, the Proposed Replacement Rule would result in significantly reduced protections for important water resources, increased flooding, and consequently injure New York's waters and the State's proprietary interests.

William Nechamen

Dated: April 12, 2019
Albany, New York

Oregon

Oregon's diverse ecosystems span the hydrologic spectrum, from the lush, wet rainforests near the coast to the arid, desert landscapes in eastern Oregon. The proposed rule fails to achieve the objective of protecting the chemical, physical and biological integrity of Oregon's and our nation's waters.

1. The need to expand state programs

In Oregon, maintaining existing regulatory coverage would likely require revisions to multiple statutes, regulations and existing permits. For example, the Oregon Department of Environmental Quality may need to review its universe of individual and general permits to determine whether Oregon's state permitting program would need to be revised and expanded to ensure that the permits for dischargers to surface waters no longer subject to federal regulation still contain requirements that are protective of water quality. This could include evaluation of Oregon's 2,000+ current entities that have permit coverage under stormwater general and individual permits that discharge to a myriad of different types of natural, constructed, and altered waterways.

In regard to section 401 water quality certifications, under the proposed rule, to maintain the same level of review and evaluation for all projects that affect waterways, and to ensure that the water quality of state waters is not reduced, Oregon may need to amend its current statutory and/or regulatory authorities to issue the equivalent type of water quality certifications to accompany state permits issued by the State currently or through state assumption of the section 404 program.

This review to maintain current coverage will incur significant costs to the state. These efforts could include the following activities for a number of programs: administrative rulemaking, evaluating and addressing resource needs, amending statutes, and assessing and amending funding mechanisms. The federal agencies' Economic Analysis did not acknowledge or evaluate this work.

Additionally not all states would choose to maintain existing protections. Oregon rivers include those that flow into our state from Idaho and Washington. The condition of wetlands and waters adjacent to, or otherwise connected with, these rivers, including wetlands and waters in those states, impacts the water quality of water bodies within Oregon. A clear and effective federal definition is necessary to set the floor of protection that is critical to water quality in Oregon, given that water bodies cross state lines and Oregon cannot regulate water quality beyond its borders.

2. The proposed rule excludes waters vital to Oregon fish and wildlife

Excluding extensive networks of waters contained in closed basins solely because they do not contribute perennial or intermittent flow to traditional navigable waters will exclude significant portions of streams in the arid west vital to supporting unique ecosystem services. In Oregon, the remaining wetlands in the Klamath Basin support one of the largest concentrations of waterfowl in North America, with over three million ducks and a half-million geese migrating through the

basin annually. The area is a critical migratory staging area for 80 percent of all Pacific Flyway waterfowl. In the winter, the Klamath Basin hosts the largest wintering population of Bald Eagles in the continental United States. The Klamath Basin also provides Oregon's only permanent nesting areas for Red-necked Grebes and Yellow Rails[8]. Though many of these habitat features are not permanent, they have an ecological value disproportionate to their abundance on the landscape.[9]

Rare vernal pool wetlands in the Agate Desert near Medford, Oregon, support several rare plant and animal species, such as vernal pool fairy shrimp which is listed as Threatened under the federal Endangered Species Act. These and other vernal pool types of wetlands are formed in areas with unusual topography and soil layering, and are very difficult to replace when ground is leveled for development.

In semiarid regions of eastern Oregon, the distribution of many terrestrial species is related to the presence of water. For example, the distribution of Greater Sage-Grouse, listed as Sensitive in Oregon and federally as a Species of Conservation Concern, is correlated to the proximity to wet habitats, such as seasonal wet meadows, playas, and streamside habitats. These seasonal wet meadows and playas, especially with native forbs, are essential during brood rearing[10]but under the proposed rule would not be ensured protection.

Under the proposed rule, many lakes and ponds in Oregon, including world-renowned Crater Lake and most natural lakes and ponds in southeastern Oregon, would no longer be subject to the Act's regulatory protection because they do not contribute perennial or intermittent flow to a traditional navigable water. These areas are characterized by unique ecological properties that deserve adequate protection under the Clean Water Act.

Headwater streams are often ephemeral. These are important for the overall function of a watershed for sediment, nutrient, and flood control, and they help maintain biological diversity, and are essential for the water quality in downstream perennial streams, which are essential for Oregon's fish and wildlife, including ecologically and economically valuable cold-water species like salmon, steelhead, and trout, as well as other native fish and wildlife. The conclusions above are supported by a 2019 American Fisheries Society Special Report[11], which documents the critical roles headwater streams and wetlands, including those that are intermittent or ephemeral, play in sustaining the nation's ecosystems, imperiled species, recreational and commercial fisheries, and cultures. This report contains many Oregon examples including the role of headwaters in the recovery and delisting of Oregon Chub and Modoc Sucker, which in 2014 and 2015, respectively, became the first and second fish species ever to be delisted from the federal Endangered Species Act due to recovery. When considered cumulatively across the drainage

[8] http://www.oregonconservationstrategy.org/strategy-habitat/wetlands/

[9] Donnelly, J.P., D.E. Naugle, C.A. Hagen and J.D. Maestas. 2016. Public lands and private waters: scarce mesic resources structure land tenure and sage-grouse distributions. *Ecosphere*, 7(1): e01208. (*https://doi.org/10.1002/ecs2.1208*)

[10] https://www.dfw.state.or.us/wildlife/sagegrouse/docs/20110422_GRSG_April_Final%2052511.pdf

[11] Collville, S.A., M.P. Sullivan, P.D. Shirey, R.W. Colvin, K. O'Winemiller, R.M. Hughes, K.D. Fausch, D.M. Infante, J.D. Olden, K,R, Bestgen, R.J. Danehy and L. Eby. 2019. AFS Special Report: Headwater streams and wetlands are critical for sustaining fish, fisheries, and ecosystem services. *Fisheries*, 44(2): 73-91. (*https://doi.org/10.1002/fsh.10229*)

network, intermittent and ephemeral waters are vital for determining the quality of perennial water and, hence, the beneficial uses supported in downstream perennial reaches and the health of economies tied to these resources.

In Oregon, salmon and steelhead are a vital part of our natural heritage, culture, and economy. These iconic fish support commercial and recreational fisheries that contribute millions of dollars to the nation's economy each year. The economic contributions of these fisheries are particularly important in many rural and coastal communities in Oregon. For example:

- Oregon's recreational salmon and steelhead fisheries provided an economic impact of $53.8 million in 2013 and $57.1 million in 2014.[12]

- Between 2012 and 2017, commercial ocean troll and recreational ocean fisheries for salmon in Oregon provided an average annual personal income impact of over $19 million with much of that impact delivered to coastal communities.[13]

- Even beyond salmon and steelhead, recreational fishing is an economic driver across Oregon. In 2011, the year of the most recent National Survey of Fishing, Hunting and Wildlife-Associated Recreation, 638,000 recreational anglers spent over 5.6 million days of fishing in Oregon with total fishing-related expenditures exceeding $640 million.[14]

These economic contributions in Oregon are threatened by reduced resource protection.

3. How will the rule be implemented on Federal Lands?

EPA and the Corps presume in their analysis of states' potential reactions to the proposed Waters of the United States definition and the associated narrowing of Clean Water Act programs that states that choose to continue to administer more expansive water quality programs will do so based on the state's definition of "Waters of the State." In Oregon, while this is a likely outcome, in addition to the level of resources necessary to implement programs based on state authorities (as described above), another significant consideration is the implementation of these authorities on federal lands.

As described in the preceding section, headwaters, ephemeral waters, and wetlands all serve essential functions in the overall watershed health and ecology. In Oregon, over 50% of land within the state is owned by the federal government and managed by various government

[12] The Research Group, LLC. 2015. Oregon Marine Recreational Fisheries Economic Contributions in 2013 and 2014. Report Prepared for the Oregon Department of Fish and Wildlife and Oregon Coastal Zone Management Association. September 2015.
[13] See Table IV-17 *in* Pacific Fishery Management Council. 2019. Review of 2018 Ocean Salmon Fisheries: Stock Assessment and Fishery Evaluation Document for the Pacific Coast Salmon Fishery Management Plan. (Document prepared for the Council and its advisory entities.) Pacific Fishery Management Council, Portland, OR.
[14] US. Department of the Interior, U.S. Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau. 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation.

agencies. Most federal land is in the Cascade Mountain Range and Eastern Oregon, which has significant overlap with waters proposed to be excluded from federal jurisdiction and water quality protections would need to rely in the future on state administered programs.

EPA and the Corps fail to address how programs administered by states to fill gaps associated with a narrowed Waters of the United States definition would be implemented by federal agencies on federal lands. Examples include implementation of Load Allocations within Total Maximum Daily Loads or addressing wetland protections or mitigation arising from a state wetlands protection program. EPA and the Corps need to provide more information regarding how this change will be implemented on federal lands.

Rhode Island

The proposed WOTUS Rule would significantly increase the differences between what the State protects and what Federal Agencies protect through the elimination of ephemeral or "less than intermittent" flows as defining a "tributary". The elimination of "ephemeral" connections potentially eliminates significant acreages of freshwater wetlands, ponds and lakes from federal jurisdiction despite clear surface water connections to WOTUS located downstream that would still retain protection, which reduces federal agency authority to fully protect water quality. This may significantly reduce the area of wetlands and other waters under Federal Jurisdiction in the State of RI.

While the State would still retain its ability to protect and regulate those waters, regulatory coordination of projects through the RI General Permit issued through the U.S. Army Corps of Engineers will likely be more difficult, resulting in additional review times and increased uncertainties in determining whether a proposed project would trigger Federal review authority. If this coordination becomes too uncertain or inefficient as a result of significant differences in review authority (which are currently very little), the State may lose much of the streamlining advantages gained through this coordinated permitting process and may be prompted to reconsider its participation, potentially leaving applicants in the state in the position of having to apply to two separate agencies for any permit affecting both State and Federal waters.

The State is concerned that a significant reduction in waters defined as WOTUS may eventually impact the ability to administer sections of the Clean Water Act that EPA has delegated to the States, including Sections 303, 401 and 402, which rely upon definitions of WOTUS. The State is concerned that any significant reduction in WOTUS protection will eventually result in pressure on State programs to similarly reduce its regulatory jurisdiction to be more in-line with federal jurisdiction, essentially resulting in a "race to the bottom" in the name of "predictability and consistency" across regulatory programs.

The State is concerned that a significant reduction in waters defined as WOTUS will translate into an uneven playing field with greater variability among the states on how waters are protected. Even in New England, where each State generally has strong water protection programs, there are still significant differences in the levels and extent of State protection, which is an argument for consistent and adequate Federal protection of WOTUS. Without this, there is greater uncertainty at the State level.

As to specific definitions in the proposed rule:

- The proposed definition of "tributary" should be based on the characteristics and connectivity of the channel, and not upon the source of the water.

- The proposed definition of "Typical Year" to determine flow duration and intermittency are difficult to use, unclear, and are not likely to be useful in definitively designating a watercourse as "intermittent" or warranting definition as a "tributary". The only reliable way to establish the existence of hydrology is review of aerial photographs of multiple years combined with on-site verification of the existence of hydrological indicators.

- The proposed definition of "adjacent" is also unclear and cannot be established with current on-line data layers. Even without surface water connections (such as with culverts through a berm), nearby waters and wetlands that may be separated from jurisdictional WOTUS by a berm or other narrow upland isthmus may still exert influence on water quality through clear groundwater connections. Protecting water quality will not be successful if such connections are ignored. A clearer method of determining adjacency and jurisdiction is needed for both protection and predictability.

Vermont

Reducing the scope of federally protected waters could have multiple detrimental impacts in Vermont. First, the loss of strong minimum nationwide protections could directly affect pollution levels in Vermont's waters, as Vermont is downstream of or shares interstate waters with several other states.

Next, a rollback in federal protections would mean a reduction in the number of waters where federal agencies can serve as a backstop or supplement to state resources. For example, to the extent Vermont's wetlands program is not co-extensive with section 404, lack of federal jurisdiction could result in a loss of protections, or could require the state to expend resources to adjust its program to fill any gaps. A reduction in the waters requiring 404 permits also would mean a reduction in the state's ability to impose water quality conditions through 401 Certifications for those permits. Similarly, there would be a reduction in the number of waters where EPA could provide oversight and supplementary enforcement under section 402. *E.g.,* 33 U.S.C. § 1319, 33 U.S.C. § 1342(d).

Additionally, greater disparity between state and federal definitions of protected waters would create a greater risk of confusion among the regulated public. In turn, this would create the need for additional outreach and education from the state, greater oversight to ensure state law is being followed, and likely a need for more enforcement.

Clarity is important. Over 230,000 acres have been identified as wetlands in Vermont, and there likely are many more that have not been mapped (up to 39%). Vt. Dep't of Envtl. Conservation, *Wetlands 101* (2016), https://bit.ly/2WXGpCr. Vermont has several types of wetlands, each with unique features, functions, and values: forested swamps, shrub swamps, floodplain forests, marshes, bogs, fens, seeps, vernal pools, and wet meadows. Vt. Dep't of Envtl. Conservation, *Wetland Types* (2019), https://bit.ly/2D8jvRr. Vernal pools provide critical habitat for many amphibians, including spring peepers and spotted salamanders. *Id.* These are special wildlife in Vermont, garnering on-the-ground support from Vermonters each spring as the wildlife migrates in search of the breeding pools. *See, e.g.,* Vt. Agency of Natural Res., *Be on the Lookout for Frogs, Salamanders along Roads,* https://bit.ly/2InqiKw; *Two Local Programs Help Amphibians Cross the Road,* Addison County Independent (Mar. 18, 2019), https://bit.ly/2KpsB2m.

More than 35% of the original wetlands in Vermont already have been lost. *Wetlands 101*, https://bit.ly/2WXGpCr. Wetlands serve a vital function in absorbing flood waters and decreasing flood damage, and Vermont is vulnerable to flooding, especially with the increasing impacts of climate change. State of Vt. *Climate Change in Vermont: Flooding* (2019), https://bit.ly/2UKUVzT. For example and as

described further above, during Tropical Storm Irene in 2011, wetlands and floodplains in the Otter Creek swamp complex significantly reduced flooding damage downstream in Middlebury. *Wetlands 101*, https://bit.ly/2WXGpCr.

Washington

If finalized, the proposed replacement rule will have a number of adverse impacts on the State of Washington. First, a significant number of waterbodies in Washington would lose federal protection under the proposed definition of WOTUS. In one county in western Washington alone, the proposal would result in over 2000 acres of wetlands being removed from federal protection under the proposed definition. The loss of federal protection in Washington's coastal areas will allow upstream pollution in waters that will no longer be waters of the United States to flow into estuaries that Washington's shellfish industry relies on to provide the clean water necessary to raise shellfish. In addition, the ephemeral streams that would lose federal protection under the proposed rule provide nutrients and flows to support salmonids. Washington has spent nearly $1 billion on salmon recovery efforts, and the failure to protect the ephemeral waters that are vital components of the hydrologic system that supports salmonids undermines that investment and the progress Washington has made towards salmon recovery.

Second, contrary to the information in the Agencies' Resource Assessment, Washington does not have a dredge and fill regulatory program for wetlands. With the exception of "isolated wetlands," Washington relies on the Corps' dredge and fill program under section 404 of the Clean Water Act to authorize impacts to wetlands that are often necessary for various development projects. If the rule is finalized, many waters of the state of Washington would lose federal protection and the Corps' section 404 program would no longer apply to those waters. However, it would still be unlawful under Washington law to impair these waters. Washington would need to develop a state permitting program so that developers are not in violation of Washington's Water Pollution Control law. It would take significant time and resources to establish a state permitting program. This will result in delays for projects and economic losses for businesses until Washington is able to replace the 404 program with state programs authorized by the state legislature for waters that will no longer be subject to the 404 program. The agencies must seriously reconsidered their evaluation of costs and benefits of the proposed rule because the Agencies' Economic Analysis discounts the difficulty states will have in achieving legislative authority and funding to develop new programs to compensate for the federal abdication of responsibility to protect waters that are currently protected under the Clean Water Act.

Third, Washington does not have authority to regulate discharges of pollution entering Washington waters from other states. Without a strong nationwide floor of Clean Water Act protections, Washington will be exposed to out-of-state pollution from states with less stringent water quality requirements and will not be able to rely on the Clean Water Act to address this out-of-state pollution. Addressing cross border pollution will place unreasonable burdens on Washington's citizens because

municipal and industrial dischargers in Washington will need to implement measures to clean up out-of-state pollution that crosses into Washington waters. The Spokane and Snake Rivers are two examples of interstate waters that may be particularly adversely affected by out-of-state pollution discharges under the proposed rule.

District of Columbia

DECLARATION OF JEFFREY SELTZER

I, **JEFFREY SELTZER**, under penalty of perjury, declare as follows:

1. I currently serve as Acting Deputy Director of the Natural Resources Administration ("NRA") within the District of Columbia Department of Energy and Environment ("DOEE"). I am knowledgeable in the fields of water resources and floodplain management, and have served the District of Columbia ("District") in positions involving these fields for over 10 years. I submit this declaration to explain how the District's interests are protected by the Clean Water Rule ("Clean Water Rule"), and the harms that would result from the proposed redefinition of Waters of the United States in the Notice of Proposed Rulemaking issued by the U.S. Environmental Protection Agency and the U.S. Army Corps of Engineers ("Proposed Rule"). 84 Fed. Reg. 4154 (February 14, 2019).

I. Summary

2. The District relies on the United States Army Corps of Engineers ("USACE") and the United States Environmental Protection Agency ("EPA") (jointly referred to as "Agencies") to administer the Clean Water Act ("CWA") Section 404 Program to regulate dredge and fill activities in wetlands and streams. The District currently lacks, but is developing, local regulations for dredge and fill activities in wetlands and streams. The Proposed Rule does not provide a phasing period that would accommodate the shift of jurisdiction from the Agencies to the States should the Proposed Rule be promulgated, thus creating a potential gap in regulatory protection. This gap in regulatory protection renders those wetlands and streams that lose their federal jurisdictional status vulnerable to unregulated filling and dredging until the District can complete new rulemaking, which could result in the irreversible loss of wetlands in the District.

3. Floodplain wetlands in the District play a key role in reducing flooding because of their ability to store floodwaters. Approximately 10,000 District residents and more than $1 billion in District-owned property are located within floodplains. If the Proposed Rule is promulgated, floodplain wetlands that do not abut or have a direct hydrologic surface connection to other Waters of the United States ("WOTUS") in a typical year lose their status as jurisdictional WOTUS. As a result, those wetlands could be subject to unregulated filling and dredging. The loss of floodplain wetlands and their associated flood attenuation benefits should such unregulated filling and dredging occur would put the welfare of District residents and District-owned property at risk of significant harm.

4. The Proposed Rule removes ephemeral streams from the proposed definition of "tributary," and, consequently, from federal jurisdiction. There is currently no complete map of all streams and stream determinations (i.e., categorizing stream reaches as perennial, intermittent, or ephemeral) for the District's watersheds. The impact of removing ephemeral streams from federal jurisdiction cannot be assessed by the Agencies or the District because the data necessary to perform an analysis of the reduction in jurisdiction is not available.

5. The Proposed Rule reduces the District's protections against water pollution from upstream sources beyond the District's jurisdictions, which the District cannot regulate.

II. Personal Background and Experience

6. I have been employed by the District Government and have held management roles since 2007.

7. As the NRA Acting Deputy Director, I am directly responsible for overseeing DOEE's efforts to protect the health and welfare of District citizens by working to maintain and improve water quality, and by managing floodplain resources throughout the District. This

includes oversight of the District's Floodplain Management and Water Quality Certification programs.

8. In my professional capacity, I represent the District on the Interstate Commission for the Potomac River Basin, and on the Metropolitan Area CO-OP Section Water Suppliers.

9. As the NRA Acting Deputy Director, I oversee the development of policies, drafting of regulations, and enforcement related to the following areas: floodplain and stormwater management, National Pollutant Discharge Elimination System (NPDES) and Municipal Separate Storm Sewer System (MS4) permit compliance, wetlands permitting and mitigation, water quality monitoring, habitat restoration, fish and wildlife conservation, regional water-related environmental issues, multistate water supply, and the Chesapeake Bay Program.

III. Role of Wetlands in the District of Columbia

10. Wetlands in the District provide multiple benefits to District residents, wildlife, and water quality through various functions including storage of floodwater; shoreline erosion protection; recharge of groundwater that sustains river and stream baseflow; and retention, assimilation, or transformation of nutrients and pollutants that can degrade downstream water quality. District wetlands act as buffers to protect the Chesapeake Bay from pollution. In addition, District wetlands are integral components of food webs, providing nursery habitat for breeding fish, amphibians, and birds; exporting organisms to downstream waters; and providing habitat for species of Greatest Conservation Need, as identified in the District's Wildlife Action Plan.[i]

11. Historically, wetlands within the District were greatly reduced and impaired in the 1800s to mid-1900s by agricultural activities, reclamation through filling, draining, and

dredging. As urbanization spread, nearly 90% of the District's tidal wetlands that existed at the beginning of the 20th century were lost as a result of dredge and fill activities and seawall construction along the Anacostia River.[ii] In 2016, DOEE performed a wetland inventory to gather detailed baseline data and functional assessments for each wetland in the District. According to this inventory, there are approximately 289 total acres of wetlands remaining in the District. Of the remaining wetlands that exist today, an estimated 280 out of 289 acres are considered jurisdictional under the Clean Water Rule.[iii]

IV. Lack of Phasing Period for Jurisdictional Shift Will Harm the District's Wetlands

12. The Proposed Rule would reduce federal jurisdiction over District wetlands by approximately 10.5%[iv], leaving those wetlands susceptible to unregulated dredge and fill activities during the shift from federal to District jurisdiction, until the District completes new rulemaking.

V. Redefining Adjacent Wetlands Would Harm the District's Interests

13. Under the Proposed Rule, wetlands that do not have a direct hydrologic surface connection to, or that abut, other waters that meet the new definition of WOTUS will lose CWA protections. A large wetland mosaic habitat unlike any other in the District is located along the Potomac River floodplain, north of Georgetown. The mosaic is comprised of 39 individual wetlands that cumulatively total 41 acres, and includes both tidal and non-tidal, abutting, and non-abutting wetland components. This wetland complex contains both Tier II (areas that are extremely significant for the conservation of biodiversity) and Tier III (areas that are highly significant for the conservation of biodiversity) habitat and a conservation opportunity area, as identified in the District's 2015 Wildlife Action Plan.[v] Under the Proposed Rule, 4.8 acres[vi] of

this mosaic wetland complex that do not immediately abut the Potomac River could lose their jurisdictional status, thereby risking significant degradation of the wetland functions provided by the other 36.2 acres of that wetland complex, fragmentation of habitat for Species of Greatest Conservation Need, and loss of biodiversity in the District.

14. Based on the 2016 Wetland Inventory, there are a cumulative total of 280 acres of wetlands in the District's 500-year floodplain that would likely be considered jurisdictional wetlands under the Clean Water Rule, but may not be considered as such in the Proposed Rule. The Proposed Rule would reduce federal jurisdiction over District wetlands by approximately 10.5%, from 280 to 250.5 acres.[vii]

15. The District is vulnerable to significant economic loss due to flooding. Approximately 3,500 District residents live in the 100-year floodplain, and an additional 6,300 live in the 500-year floodplain.[viii] The total economic loss in the District from a flood stage that approximates the 100-year flood elevation along the Potomac and Anacostia Rivers is estimated at $316 million.[ix] The total economic loss in the District from a flood stage that approximates the 500-year flood elevation along the Potomac and Anacostia Rivers is estimated at $770 million.[x]

16. The District government also stands to sustain direct financial loss during a flood event. The total assessed value of District government-owned properties is approximately $1.4 billion in the 100-year floodplain and $3.2 billion in the 500-year floodplain.[xi]

17. Promulgation of the Proposed Rule would result in fewer protections for jurisdictional floodplain wetlands in the District and upstream states, which could increase the likelihood and frequency of 100-year and 500-year flood events occurring in the District, and, consequently, increase District and federal expenditures necessary to respond to these events.

Such events would also pose substantial risks to the safety of residents of the District, as well as increase risks of adverse impacts on federal and District government operations.

VI. Role of Ephemeral Streams in the District of Columbia

18. As described in the EPA Connectivity Report, ephemeral and intermittent streams receive pulsed inputs of water, sediment, organic matter, and other materials during rain events, and this episodic connection can transmit substantial amounts of material into downstream waters. Headwater streams are a source of water, nitrogen, organic carbon, and sediment to downstream waters. First-order streams (largely ephemeral and intermittent) cumulatively contribute approximately 60% of the total mean annual flow to all Northeastern US streams and rivers.[xii]

VII. Removing Ephemeral Streams from Clean Water Act Jurisdiction Would Harm the District's Interests

19. Under the current Clean Water Rule, ephemeral streams that are hydrologically connected to traditional navigable waters confer federal jurisdiction. Without complete stream maps or stream determinations, the impact of removing ephemeral streams from federal jurisdiction cannot be accurately assessed by the District or the Agencies. However, given that all tributary streams, including perennial, intermittent, and ephemeral streams, are physically, chemically, and biologically connected to downstream rivers,[xiii] the District's rivers and the Chesapeake Bay will be vulnerable to adverse impacts from unregulated dredge and fill in ephemeral and headwater streams during the jurisdictional shift from federal to District regulation.

VIII. Downstream Impacts

20. The District stands to suffer negative impacts on water quality within its boundaries due to pollution contributed by upstream jurisdictions.

21. Additionally, loss of federal jurisdiction over ephemeral streams and many wetlands upstream will increase the risk of flooding contributed by upstream jurisdictions.

22. The vast majority of watersheds for District waterbodies lie outside of its boundaries. Specifically, 99.5% of the Potomac River watershed, 83% of the Anacostia River watershed; and 80% of the Rock Creek watershed, lie outside the District's boundaries. [xiv] The District cannot control pollution discharges outside its jurisdiction and therefore relies on federal regulation to protect its downstream water resources. If areas upstream of the District lose federal regulatory coverage over waters that are chemically, physically, and biologically connected to the downstream waters of the District, degradation of water quality upstream will impact the District's ability to meet EPA-mandated Total Maximum Daily Load (TMDL) requirements under the CWA.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct.

Executed on April 12, 2019

Jeffrey Seltzer

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[i] DOEE, Wildlife Action Plan, 2015, p. 14, available at: https://doee.dc.gov/service/2015-district-columbia-wildlife-action-plan.

[ii] Bernstein, B. and D. Shepp, 1992. *Restoring Tidal Wetlands in the Anacostia.* In: Watershed Restoration Book. Department of Environmental Programs, Metropolitan Washington Council of Governments. Washington, D.C. pp 125–144.

[iii] Estimate is based on an analysis of the 2016 wetland inventory GIS database, photographs of individual wetlands, topography maps, and aerial photographs. Official jurisdictional determinations may only be made by the U.S. Army Corps of Engineers.

[iv] *Id.*

[v] Wildlife Action Plan at 82.

[vi] Estimate is based on an analysis of the 2016 wetland inventory GIS database, photographs of individual wetlands, topography maps, and aerial photographs. Official jurisdictional determinations may only be made by the U.S. Army Corps of Engineers.

[vii] *Id.*

[viii] Calculated based on Census' 2011-2015 American Community Survey (ACS) population estimates.

[ix] Figures based on analysis using FEMA's Hazards of the U.S. (HAZUS) tool: https://www.fema.gov/media-library-data/20130726-1742-25045-6959/hazus_mh.txt.

[x] *Id.*

[xi] Based on 2019 tax-assessed values of District government owned and co-owned properties.

[xii] U.S. EPA, Connectivity of Streams & Wetlands to Downstream Waters: A Review & Synthesis of the Scientific Evidence (Final Report). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-14/475F, 2015, p. 3-1.

[xiii] *Id* at ES-2.

[xiv] D.C. Water and Sewer Authority, Combined Sewer Long-Term Control Plan, July 2002, p. 2-2, Table 2-1.

Attachment B

Expert Review of the Economic Analysis of the Proposed Revised Definition of "Waters of the United States"

Expert Review of the Economic Analysis for the Proposed Revised Definition of "Waters of the United States"

Prepared by Catherine L. Kling, Ph.D.
on behalf of
Office of the New York State Attorney General

April 15, 2019

I am currently employed as a Tisch University Professor in the Dyson School of Applied Economics and Management at Cornell University, where I am also Faculty Director at the Atkinson Center for a Sustainable Future. I was elected to the National Academies of Sciences in 2015, and currently chair its Water Science and Technology Board. I served for ten years on EPA's Science Advisory Board, and chaired its Environmental Economics Advisory Committee during the time it finalized its agency "Guidelines for Preparing Economic Analysis." I specialize in the economic valuation of ecosystem services, and integrated assessment modeling for water quality. I have published nearly one-hundred refereed journal articles and book chapters, and am currently editor of the *Review of Environmental Economics and Policy*. I attach my full C.V. to this review.

I have reviewed the "Economic Analysis for the Proposed Revised Definition of 'Waters of the United States'" (Dec. 14, 2018) (Economic Analysis or EA), and its supporting documents that were prepared by the EPA and Army Corps (the Agencies) in support of their proposal for replacing the Clean Water Rule. *See* "*Revised Definition of 'Waters of the United States*,'" 84 Fed. Reg. 4154 (Feb. 14, 2019) (proposed replacement rule or proposed rule). I submit this expert review of the Agencies' analyses to the New York State Attorney General's Office, which is compensating me for this work.

Summary Findings

As documented in further detail below, in my opinion the Agencies' Economic Analysis does not conform to accepted practice and applicable EPA Guidelines for Preparing an Economic Analysis (EPA Guidelines) for environmental regulations. The Economic Analysis is unnecessarily complicated, internally inconsistent, unsupported by the economic literature, and lacks the detail and documentation that are hallmarks of a sound study. Where sufficient detail does exist, the Agencies appear to have inflated the cost savings in program administration and for the regulated community, while understating the forgone value to the public from loss of wetlands and other waters that the proposed rule would cause. The Agencies incorporate speculative State regulatory responses into their Economic Analysis contrary to EPA Guidelines. This only serves to cloud and understate the full adverse effects of the proposed rule, especially because the Agencies do not account for the costs states would incur in their regulatory responses. In addition, the Agencies employed the Soil and Water Assessment Tool (SWAT), a modeling tool, to evaluate potential water quality impacts in three watersheds, but this also did not conform to sound modeling practices because the Agencies did not demonstrate in the Economic Analysis that their models were subject to peer review and were properly calibrated. As a result, the models have not been shown to meet professional standards. Finally, the Agencies' Quantitative Assessment of National Impacts of the Section 404 Program suffers from

many of these same methodologies or deficiencies, including its failure to account for State regulatory costs in its calculations.

When the biases of the Economic Analysis are corrected, the proposed rule is likely to provide negative net benefits.

The Agencies repeatedly emphasize the lack of adequate data and regulatory uncertainty as a barrier in performing a proper benefit-cost analysis. However, in my opinion the Agencies' choice of methods and lack of transparency only serves to exacerbate any data limitations, rather than shed light, on the proper identification and quantification of impacts from the proposed rule according to best practices in benefit-cost analysis and EPA's own Guidelines.[1] The purpose of the executive orders mandating benefit-cost analysis for major federal regulations, which were initially issued by President Reagan and continued through every administration since then, is to use economic analyses (EAs) to ensure that federal Agencies economically justify their regulatory decisions consistent with applicable law. For the reasons just stated and elaborated on below, I do not believe this EA satisfies the purpose of Executive Order 12866. I present my detailed findings in the points below.

Findings

Finding #1: The Agencies methodology of conducting a two-stage assessment was contrary to standard economic practice, lacked sufficient rationale, was internally inconsistent and therefore contrary to EPA Guidelines.

A critical first step in any cost benefit analysis is a clear description of the world before the proposed rule takes places (the baseline or the "without" the rule scenario) and after the rule takes place (the "with" the rule scenario). In this situation, the proposed rule would replace the 2015 Clean Water Rule, and the Agencies acknowledge the 2015 rule as the "primary" baseline for this analysis (page 2).[2]

Therefore, under this rubric the Agencies should have directed their resources primarily to developing a comparison of the costs and benefits between the proposed rule and the baseline – the 2015 Clean Water Rule. However, the Agencies state that they encountered limitations in "critical datasets" [EA, p.24] that "would not allow analysis" [EA, p.24] comparing the Proposed Rule to the Clean Water Rule. So instead the Agencies elected to use a two-stage methodology for valuing impacts from the proposed rule, consisting of Stage 1 comparing costs and benefits of the Clean Water Rule to costs and benefits of the pre-2015 regulations, and then Stage 2

[1] *Guidelines for Preparing Economic Analyses*, National Center for Environmental Economics, Office of Policy, U.S. Environmental Protection Agency. Dec. 17, 2010 (Updated May, 2014). Available at: https://www.epa.gov/environmental-economics/guidelines-preparing-economic-analyses#download (accessed March 29, 2019)

[2] Citing to the legal uncertainty of the 2015 rule, the Agencies determined that an "alternative baseline" of the pre-2015 regulations would also be appropriate (page 3). But the EPA Guidelines make clear that a baseline should incorporate the full implementation of existing standards. The 2015 Clean Water Rule remains the regulatory definition of waters of the United States though it is my understanding that it has been preliminarily enjoined in many states.

comparing costs and benefits of the pre-2015 regulations with costs and benefits of the Proposed Rule. The Agencies state that "[t]ogether, these two stages describe the potential effects of moving from the 2015 Rule to the proposed rule." EA, p.25. This would be true if the Agencies employ consistent assumptions and methodologies for both stages. But they do not.

After attempting to implement this approach, the Agencies concluded that the same data limitations that would not allow a quantitative comparison between the proposed rule and the Clean Water Rule also prevented them from quantifying impacts between the proposed rule and pre-2015 regulations. In essence, the Agencies had elected to perform a two-stage analysis but then determined that the Stage 2 comparison of costs and benefits could not be quantified; only a qualitative analysis in Stage 2 was possible. Their analysis therefore does not assess the change in costs and benefits from the pre-2015 rule to the proposed rule. As detailed further below, in my expert opinion the Agencies' two-stage approach is unnecessarily complex, internally inconsistent, and runs contrary to standard economic practice.

Finding #2: The Agencies did not provide sufficient information to support their claim that a quantitative or qualitative analysis could not be performed between the Proposed Rule and the Clean Water Rule.

The Agencies acknowledge that they possess nationwide data showing instances where agency staff made determinations whether particular waters were jurisdictional and thus subject to Clean Water Act protections. This jurisdictional determination information is contained in the Army Corps database "ORM2" that documents application and permit data for the Section 404 program. When evaluating the Proposed Rule's potential impact on waters that are jurisdictional under the Clean Water Rule baseline or the alternative pre-2015 regulatory "baseline," however, the Agencies did not review any data in the ORM2 database for jurisdictional determinations made under the Clean Water Rule. Their rationale is as follows:

> "The Agencies are not using data from ORM2 for approved jurisdictional determinations that were made under the 2015 Rule for this analysis. The relatively small number of AJDs [administrative jurisdiction determinations] made under the 2015 rule before it was stayed by the courts or in states where the stay was recently lifted is not a representative sample when compared to the large numbers of AJDs documented in ORM2 under pre-2015 practice." EA, p.9

> "The Agencies were also concerned about using AJD information reflecting the categories of waters that the Agencies would have found jurisdictional or non-jurisdictional under the 2015 rule because a disproportionate number of the AJDs finalized under the 2015 Rule involve exclusions and non-significant nexus determinations." EA, p.10.

This explanation is insufficiently supported. Although the Agencies are correct that the rule has been unevenly applied nationwide, that is not necessarily a basis to exclude information collected from jurisdictional determinations made in those states where Clean Water Rule is in effect. The majority of the data used in this Economic Analysis, as in almost all analyses of large, complex

rules, are subject to data limitations due to representativeness, spatial resolution, and other shortcomings. Yet transparent and consistent application of assumptions can provide valuable information on costs and benefits.[3] The Agencies do not state that a data analysis is not possible. A review of the Army Corps database indicates that 695 jurisdictional determinations have been made under the 2015 rule nationwide.[4] The Agencies have articulated no reason why they could not review the determinations made under the Clean Water Rule to evaluate the potential impact on those waters under the Proposed Rule. If the Agencies believe that there has been uneven or unrepresentative application, they could simply review the existing jurisdictional determinations and weight more heavily those determinations that they believe best represent future determinations.

Further, elsewhere in this Economic Analysis – specifically the case study watersheds - the Agencies analyze relatively small geographic areas using limited and incomplete data to illustrate potential impacts.

In the Stage 2 "qualitative analysis," the Agencies also fail to articulate why they are unable to evaluate the impacts of the Proposed Rule compared to the Clean Water Rule. In their justification for employing a two-stage analysis, the Agencies cited to "limitations in a critical dataset that they determined would not allow analysis of the proposed rule from the primary baseline." (EA, p. 24). To evaluate impacts in Stage 2 of their analysis, the Agencies selected three case study watersheds from across the country to perform a discreet analysis of the ORM2 database. In using the ORM2 database in these watersheds, the Agencies did not question the "representativeness" of the data. For each case study watershed, agency staff reviewed permit data within ORM2 for the geographical area, and using their "best professional judgment", identified waters that may no longer be jurisdictional under the Proposed Rule. EA, p.85. For example, in the Ohio River Basin Case Study, the Agencies identified 819 projects that were granted Section 404 permits sited on waters the Army Corps determined were jurisdictional under the pre-2015 regulations. They found that some of those waters may no longer be jurisdictional under the proposed rule. EA, p.140. But the Agencies provided no explanation (or even discussion) as to why Agency staff did not analyze ORM2 data for the three watersheds to determine whether their waters would be jurisdictional under the Clean Water Rule but would not be jurisdictional under the proposed replacement rule. Such analyses would have made possible a direct comparison between the Clean Water Rule – the proper baseline under EPA's guidelines for benefit-cost analysis – and the Proposed Rule.[5]

[3] For example, the Agencies relied on limited studies in their meta-analysis and benefits transfer estimates of lost benefits of wetlands. These studies do not represent the full US population or all types of wetlands that would be affected by the proposed regulation.

[4] *See* US Army Corps of Engineers postings of Approved Jurisdictional Determinations, available at http://corpsmapu.usace.army.mil/cm_apex/f?p=340:11:0::NO

[5] In their EA for the Clean Water Rule the Agencies had analyzed past jurisdictional determinations under the pre-2015 regulations to see which waters would be jurisdictional under the Clean Water Rule.

Finding #3: The Agencies Stage 1 analysis methodology for quantifying the value of wetlands is unsupported by the economic literature.

In Stage 1 of the Economic Analysis, the Agencies quantified the monetary value of benefits of wetlands (foregone wetlands benefits) estimated to be lost as a result of moving from the existing 2015 Clean Water Rule to the pre-2015 rule. To perform this calculation, the Agencies utilized the same estimate of the acres of wetlands impacted as they identified in the Clean Water Rule economic analysis. However, the Agencies did not utilize the same monetized value of wetlands from the Clean Water Rule. Instead, the Agencies elected to recalculate the monetized value of wetlands in this proposed rule using an entirely new methodology.

To support this new methodology, the Agencies contracted with outside economic experts to perform a "meta-analysis" of the economic literature as a new basis for monetizing the foregone benefits from wetland acres for use in a benefit transfer.[6] The Agencies used the results from this meta-analysis inappropriately in their aggregation of foregone wetland benefits, thereby generating a downward bias in the value of forgone wetland benefits in moving from the 2015 rule to the pre-2015 regulation. Further, adequate details are not provided concerning how the Agencies generated the per-household transfer values from the meta-analysis, so it is not possible to understand whether the Agencies correctly applied both the "use" and "non-use" values of wetlands, as explained further below.

The Agencies' application of the meta-analyses is difficult to assess since they provide no methodological details or calculations to understand how they generated the per-household values listed in Table III-9 from the meta-analysis. Specifically, it is not clear whether the Agencies used the mean or median results from the meta-analysis. The Agencies also do not indicate whether results from the meta-analysis reflect both use and non-use values of wetlands. While some of the studies used to build the meta-analysis model are based only on use values, there is no question in the environmental economics field that wetlands generate both use and non-use values. It would be appropriate to incorporate both use and non-use values forgone by the loss of wetland acres, as both values are documented in the economics literature (including a number of studies incorporated into the meta-regression as evidenced by the use of explanatory variables such as cultural function identified in Table III-6). If the Agencies only applied use values in constructing the estimates in Table III-9, then this would clearly bias the results down as a significant percentage of the documented value of foregone benefits would not be captured in the calculations.

Notwithstanding these foundational questions as to whether the full value of wetlands identified in the meta-analysis were properly used by the Agencies, whichever value the Agencies did use appears to have been misapplied in a manner that is unsupported by the economic literature. Without explanation or support in that literature, the Agencies appear to have only applied the meta-analysis' unit value of wetlands located in a particular state to residents in only that state, thereby excluding the known regional benefits of wetlands. This unreasonably narrow definition of the extent of the market for lost wetlands runs contrary to the approach that the Agencies used in the Economic Analysis for the Clean Water Rule, where the value of wetlands was captured at

[6] Moeltner et al. 2018.

both the state and regional scale. The Agencies provided no explanation or support for this fundamental methodological change.[7]

By limiting the extent of the market to just those Americans who live in the state in which the wetland is located, the Agencies have excluded known benefits that accrue to residents outside of those states, thus creating a downward biased estimate of the lost benefits of removing those wetlands from protection. This is supported by the economic literature.

Pate and Loomis (1991) provide direct evidence countering the narrow extent of the market for wetland benefits adopted by the Agencies in the current analysis. In their study, Pate and Loomis found that residents of Oregon, Washington and Nevada all reported positive willingness to pay values to protect wetlands in the San Joaquin Valley of California, which is clearly outside of their state boundaries. Their research demonstrated the regional extent of the market for residents' willingness to protect wetlands, and the size of the error from incorrectly limiting the extent of the market for wetlands to state boundaries. Pate and Loomis found that "…restricting benefits to just the political jurisdiction in which the site is located would understate the benefits by at least $300 million."

Additional evidence from studies of the extent of the market for environmental resources other than wetlands, including water quality, is also consistent with the finding that limiting the extent of the market to the state in which the resource is located can significantly underestimate benefits. One of the first studies to establish this point is Sutherland and Walsh's (1985) study of the value of water quality improvements in the Flathead River system in Montana. They found that households within a 640 mile distance exhibited positive values for the preservation of water quality.

Additional evidence comes from three separate studies of nonmarket benefits described in Loomis (2000) and Loomis (1996): two nationwide studies and one study of residents of California, Oregon, and Washington. The studies assess the extent of the market for Washington State Salmon, the Mexican Spotted Owl and 62 threatened and endangered species in the four corners region of the Southwest. In all cases, the extent of the market is found to extend well beyond the boundaries of the state where the resource is located. In fact, Loomis (2000) finds that "… measuring only the benefits at the state level would result in just 13% of the national total public good benefits…"

The Agencies' application of a narrow extent of the market in their Economic Analysis most likely accounts for their significantly lower value of wetlands estimate when compared to their analysis of those same wetlands under the Clean Water Rule. In their Stage 1 analysis in support of the proposed rule, the Agencies estimate $96.5 - $106.9 million in foregone wetland benefits in moving from the Clean Water Rule to the pre-2015 regulations. This estimate is about one-third of the $306.1 million estimate of these same wetlands the Agencies stated in the Clean Water Rule. They have zeroed out benefits accruing to anyone outside of the state in which the wetland is located. This assumption is directly at odds with the available evidence in the published literature and common sense which tells us that the use and enjoyment of water resources by the public does not begin and end at a state boundary.

Finding #4: The Agencies incorporation of speculative State regulatory responses into its Economic Analysis does not comply with EPA Guidelines.

A benefit-cost analysis of a proposed regulation or rule is designed to characterize the benefits and costs of that rule alone, not that rule or regulation in combination with possible other changes in rules or regulations. The basic tenet of comparing the state of the world with the new regulation to the state of the world without the regulation demands this approach.

An agency evaluating a change in its regulations should choose a baseline that appropriately includes other federal and state regulations that would remain after the new regulation takes place. However, the EPA Guidelines specifically state that it is only appropriate to consider state or tribal rules that are currently promulgated, and no other.[8] Agencies conducting cost benefit analyses are specifically advised not to engage in speculation concerning possible state rule changes.

The Agencies' evaluation and incorporation of speculative state regulatory responses as part of the economic analysis undertaken for the Proposed Rule is directly at odds with EPA's own regulatory guidance. The Agencies erroneously evaluated the potential regulatory responses to the Proposed Rule in all aspects of their Economic Analysis, including the Stage 1 analysis, Stage 2 analysis – including using potential state regulatory responses as a factor in determining where to perform case studies, and in their analysis of the National 404 program. This is contrary to EPA Guidance. The appropriate time to evaluate any change in State regulatory programs would be in a later – separate cost benefit analysis, presumably undertaken by each state when they decide whether to promulgate regulations in response to the lack of federal oversight.

The only state or tribal regulations that might be appropriate to include in a baseline would be if the state or tribe already had regulations in effect and whose regulatory extent of waters would not be impacted by the federal legal opinions and guidance on Waters of the United States.. But importantly, if those states are <u>not</u> currently enforcing the tighter standards they have on the books because the federal government is doing the enforcement of the federal baseline, than transferring that regulatory obligation to states will impose costs on the states (see page 29 in the EA for acknowledgement of this point). Since the benefits would not change, but the costs would increase, the movement of this obligation to the states logically results in a net cost to states with no benefits to show for it. But, it appears that the Agencies ignored such costs in construction of their cost calculations in all of their state regulatory response scenarios, despite the fact that they directly acknowledge in their prose that such cost would exist.

The extensive discussion of state responses and uncertainty makes it difficult to decipher which numbers presented are actually appropriate for consideration. For examples, on pages 57-59 (and Table III-1) the Agencies explain various options related to state responses, but many of those options concern situations where states might choose to regulate when they currently have no such rules. As noted, only if the states have laws in place that will result in equal jurisdictional

[8] EPA Economic Guidance (2010), p 5-13 "It is important, however, that the analyst not simply speculate that another rule will be implemented. Any other rule included in the baseline, other than those already promulgated, should be imminent or reasonably anticipated with a high degree of certainty." Given the vagaries of political processes, changes in state laws in response to promulgation of the proposed rule would certainly not be imminent or expected with a high degree of certainty.

coverage as the federal definitions is it appropriate to assume that there will be no change after the proposed rule. And, in that case, the EA should include a net cost to account for the need for states to develop and implement their own regulatory and enforcement programs. A switch of regulation to states is not a net zero — it is a net cost associated with the proposed rule.

Finally, the primary justification for why the Agencies are not able to generate numerical estimates of benefits and costs of their proposed rule relies on the argument that they do not know how states and tribes will respond. Since possible state responses are irrelevant, this is not justification for doing an incomplete economic analysis. An important example of this occurs on page 96 - 98, where they describe impacts from the proposed rule on the 404 Program. The Agencies state: "Figure IV-2 presents potential effects of the proposed rule on the section 404 program. Without CWA coverage for certain wetlands, ephemeral streams, and others water whose jurisdictional status could change, the decision to regulate these waters will solely reside with states and tribes." EA, p.97

The end of the statement that "…the decision to regulate these waters will solely reside with states and tribes" strongly suggests that states and tribes do not have existing regulatory authority. Consequently the loss of wetlands and ephemeral streams they identify in Tables IV-2 and IV-3 should be included in the analysis of forgone benefits. By clouding the discussion with supposed uncertainty related to state responses, they repeatedly suggest that a meaningful analysis cannot be undertaken, but the uncertainty regarding whether states might react is irrelevant.

Finding #5: The Agencies Stage 2 analysis of case study watersheds does not appear consistent with best practices.

While use of a detailed land use model combined with hydrology and economic values could provide insight into the impacts of the proposed rule, the case studies presented here suffer from apparent analytical deficiencies and therefore provide no revealing information on the benefits or costs or environmental impacts of the proposed definitional change. Further, the irrelevant discussion of potential state responses is continued here, although it is not clear whether this is done consistently (see Table IV-17 which shows multiple scenarios).

It does not appear that the SWAT models used here have undergone rigorous peer review (no citations to academic journals or to Agency peer review processes are provided). Since peer review is a criterion the Agencies used for eliminating studies they had used in prior rulemakings from their Stage 1 analysis, the same standard should be applied here or else the Agencies are acting inconsistently.

The Agencies' SWAT model scenarios do not appear to evaluate changes in foregone wetland acreage. This indicates that the models are not appropriately calibrated for the individual watersheds in which they are applied, are inappropriate for use in the evaluation of the proposed rule because of the importance of wetlands to it, or that there are other shortcomings in the models. In theory, model runs could be helpful to estimate the water quality impacts of the Agencies projected changes. However, it is unclear from the analysis what inputs the Agencies selected regarding the magnitude of the changes (loss of jurisdictional waters). If the loss of

jurisdictional waters does not include wetlands, then the water quality parameter outputs from the model would not reasonably reflect the proposed rule. In the three case studies, the amount of acreage the Agencies appeared to have assumed to change in jurisdictional status is quite small and therefore the models' output shows almost no discernable water quality impacts. The Agencies need to provide further information as to their estimation on the magnitude of the jurisdictional changes from the proposed rule.

The Agencies should also provide further information as to whether the models have been calibrated, and if so, how. There are a number of existing watershed models that have undergone peer review and that are calibrated to their watersheds. For example, the Chesapeake Bay Program has a Watershed Model that is in its sixth iteration and that is a result of long-lasting partnerships with federal Agencies and the academic community.[9] The Agencies have failed to explain why existing calibrated and peer-reviewed watershed models were not considered for the case studies, or if such models were considered, why the Agencies did not utilize those models to more accurately illustrate potential water quality impacts from the Proposed Rule.

Table IV-56 on page 201 provides a summary of the findings from the three case studies. In short, the studies provide no more information than would have been provided without the case studies. N/A and "not monetized" fills 16 cells out of the 28 reported. The analysis begins with their premise that there is inadequate data, the document fills 100+ pages to come to the conclusion that they cannot say anything.

Finding #6: The Agencies were inconsistent in their assumptions within their two-stage analysis.

The Agencies determine on page 52 of the Economic Analysis that the proportionality assumption (the proportionality assumption is that the same percentage of benefits that are estimated to accrue for wetlands protection in the 404 program applies equally to the other CWA programs that will be impacted by the definitional change[10]) that the Agencies utilized in their analysis of the Clean Water Rule in 2015 to estimate the acreage of waters associated with changes in jurisdictional determinations could overstate benefits. The Agencies conclude that the assumption is inappropriate and should not be used for Stage 2 of the analysis. Nevertheless, the Agencies applied the proportionality assumption in Stage 1 of the Economic Analysis, while not applying it during Stage 2. EA, p.56.

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[9] http://archive.chesapeakebay.net/pubs/backgrounder_CBP_Models.pdf

[10] The EA, at p. 53, explained how this assumption was used in the EA in 2015 for comparing the Clean Water Rule to its predecessor regulations:

> The estimated increase in jurisdiction was anticipated to provide benefits and cost to the nation by increasing the reach of a number of CWA programs covered under sections 303,311, 401, 402, and 404. The 2.84 percent to 4.65 percent increases in overall CWA jurisdiction were used to then estimate the total costs and benefits of that rule. Specifically, the total costs and benefits from the most recent regulatory impact analysis for each of the affected CWA programs were first adjusted to 2014 dollars, then the program sizes were adjusted to reflect sector growth or realized information on the size of the sector, and finally, those estimates were simply multiplied by the estimated 2.84 percent and 4.65 percent increase in CWA jurisdiction to calculate an estimated range of costs and benefits for each CWA program under the 2015 Rule.

Since the Economic Analysis covers the change from the baseline of the Clean Water Rule to the proposed rule, and the breakdown between the Stage 1 component (movement from the Clean Water Rule to pre-2015 regulations) and Stage 2 (movement from pre-2015 to the 2019 proposed rule), the Agencies' decision to incorporate the proportionality assumption into Stage 1, and not into Stage 2, is internally inconsistent and arbitrary. Further, since they reject the proportionality assumption but make no attempt to suggest a more appropriate assumption, the Agencies effectively attribute a value of zero to all jurisdictional changes covered in stage 2 of their analysis. The inconsistent use of the assumption in Stage 1 and Stage 2 is also inconsistent with the EPA Guidelines for benefit-cost analysis which emphasize the need for consistent application of assumptions throughout an Economic Analysis (Chapter 5 of the Guidelines state "Each baseline-to-policy comparison should be internally consistent in its definition and use of baseline assumptions." (p. 5-3) and "Use the baseline assumptions consistently for all analyses for this regulation. The models, assumptions, and estimated parameters used in the baseline should be carried through for all components of the analysis." (p. 5-5).

In addition, the Agencies were inconsistent in the valuation of waters identified in the Stage 2 case studies when compared to the valuation of waters in the Stage 1 analysis. Specifically, in the Stage 1 analysis they preferentially selected to apply a meta-analysis of wetland benefits rather than utilize the unit transfer approach that the Agencies used in the Clean Water Rule Economic Analysis. However, in their analysis of foregone benefits for the Ohio case study in Stage 2, the Agencies reverse themselves and do a unit transfer from a study by Blomquist and Whitehead. Additionally, in doing the transfer, they adopt a very small extent of the market, using only state residents as beneficiaries. Table IV-11 reports a total of 14.3 acres with mitigation requirements affected by the change in the definition of WOTUS, but Table IV-12 indicates that only 2.9 acres will be affected. The reason for this difference is unclear.

Finding #7: The Agencies Stage 2 Quantitative Assessment of National Impacts of the 404 Program does not conform to EPA Guidelines

The national economic analysis of the 404 Program does not conform to EPA Guidelines for several reasons. First, as explicitly acknowledged on page 204, the Agencies consider only a portion of the potential effects "… it is possible to quantify and value <u>at least some</u> of the potential effects" (page 204, emphasis added). They further explain that they include only the "…404 program impacts for which data are sufficient to develop quantitative estimates at the national level." This statement makes clear that they have omitted forgone benefits that they do not attempt to quantify. In that case, the EPA Guidance clearly indicates that they should list the omitted effects and consider them even if they cannot be quantified. Instead they have ignored them. Second, the Agencies acknowledge that their approach "… incorporates the predicted state response under various scenarios…" which again is a clear violation of EPA Guidance which indicates that Agencies should not speculate on state or tribal responses. Third, the Agencies inappropriately use state boundaries as the extent of the market for wetland resources located in those states. As noted above, this will clearly bias down the forgone benefit estimates.

Finally, they have inappropriately assigned zero costs to states who may have existing regulations requiring them to ramp up regulatory programs to take over the federal responsibility

if the proposed definition of WOTUS is adopted.

Finding #8: The Agencies' expression of impacts from the proposed rule did not conform to EPA Guidelines concerning the complete reporting of costs and benefits.

The Economic Analysis fails to clearly and transparently delineate the magnitude and location of the impacted resources and associated impacts to water quality and ecosystem services that may occur under the proposed rule. EPA Guidelines require that an agency proposing a rule clearly delineate and discuss all physical measures of environmental impacts throughout their economic analysis. Importantly, where an agency cannot monetize physical impacts, the Guidelines directs the agency to continuously carry those impacts through the analysis and not ignore them or consider them of no value. This point is explicitly made on page 11-3 of their Guidelines (and copied into Appendix 2 below) which states that when presenting findings "[a]ll meaningful benefit and costs are included in all of the tables even if they cannot be quantified or monetized. Not only does this provide consistency for the reader, but it also maintains important information on the context of the quantified and monetized benefits."

The Agencies acknowledge that the proposed rule will reduce the acreage of jurisdictional wetlands, and have estimated some of the forgone benefits from those reductions. They also acknowledge that the proposed rule will eliminate federal jurisdiction over ephemeral streams, and reduce federal jurisdiction over other aquatic resources. But the forgone benefits of those changes should be clearly identified and discussed throughout the economic analysis. They were not. The Agencies identify some of the potential impacts from the proposed rule in Figure IV-9 (page 133). These potential impacts include increased oil spill risk; greater pollutant loads; increased flood risk; degraded aquatic habitats, greater water body impairments, sedimentation concentrations and deposition, and drinking water intake risks from oil spills and their associated economic impacts (such as reduction in ecosystem services). These impacts are missing from their National 404 Program analysis (Section IV.C. Stage 2 Quantitative Assessment of National Impacts) and are likewise missing from their summary findings for their case studies (Table IV-56).

As an example of a particularly significant omission, the case studies all note that threatened or endangered species are present in the studied watersheds, and these species depend upon the impacted waters including ephemeral streams and others, but this information is only briefly mentioned and does not appear in any table, let alone summary tables. These forgone benefits could be considerable and completely disregarding them generates a source of downward bias in the forgone benefits.

Conclusion

The Agencies performed an Economic Analysis that is methodologically unsupported, utilizes assumptions that are contrary to the published literature, is internally inconsistent, and that lacks the required detail and documentation to facilitate comprehensive stakeholder review. The Agencies fail to provide a direct comparison of costs, benefits, or environmental impacts between the Proposed Rule and the Clean Water Rule, despite opportunities to do so. Instead, the

agencies elected to perform a two-stage analysis that introduced numerous inconsistencies within the two stages of the analysis, as well as inconsistencies with prior Agency positions in the Clean Water Rule.

In their Stage 1 analysis, the Agencies choice of valuation methodology significantly underestimated foregone wetlands benefits under the Proposed Rule by assuming that wetlands are only valued by people that reside within the same state as those wetlands, and that residents outside of those states – such as out-of-state residents that live downstream of the wetlands – do not value those wetlands, contrary to published economic literature. The Agencies incorporate speculative State regulatory responses to the Proposed Rule into their Stage 1 and Stage 2 analysis contrary to EPA Guidelines. These speculative State responses further served to understate benefits, and did not account for the costs states incur in their regulatory responses. The Agencies' Stage 2 analysis of potential water quality impacts using the SWAT modeling tool did not conform to sound modeling practices as their models appear to lack peer review and properly calibration. The Agencies' Quantitative Assessment of National Impacts of the Section 404 Program incorporates virtually all of these methodological deficiencies into their calculations, including the failure to account for State regulatory costs.

It is my opinion that the sum of these methodological deficiencies and unsupported assumptions resulted in significantly downward biased valuation of foregone wetlands benefits under the Proposed Rule. When these biases are corrected to incorporate the economically supported valuation of foregone wetlands benefits at the regional scale, the proposed rule is likely to provide negative net benefits.

Appendix 1: Text Book 5.2 from the EPA Guidelines, from page 5-13 of EPA Guidelines for Preparing Economic Analyses related to assumptions regarding state and tribal responses (emphasis added).

Text Box 5.2 - Sequencing Unlinked Rules

It is impossible to identify all of the possible scenarios one might need to consider when determining which rules to include in a baseline, but a few illustrative cases are provided below.

Including final rules that have not yet taken effect: This is the most straightforward case. All final rules promulgated prior to the rule under consideration should be included in the baseline. The costs and benefits of the regulation under consideration must be evaluated against a baseline that assumes firms will comply with these promulgated rules. For example, on March 15, 2005, EPA issued the Clean Air Mercury Rule (CAMR) to reduce mercury emissions from coal-fired power plants. Five days earlier, on March 10, 2005, EPA finalized the Clean Air Interstate Rule (CAIR) to reduce sulfur dioxide (SO_2) and nitrogen oxides (NO_x) emissions from coal-fired power plants. Because the control technology assumed under CAIR included some mercury reductions, the baseline used for CAMR included the actions that firms would need to take to comply with CAIR.

Including rules anticipated to occur after a regulation is promulgated but before it takes effect: This is a more difficult case and only applies to regulations that have a long lag between the date on which they are issued and the date when they take effect. The longer the difference between these two dates, the more important it is to include rules that can be expected in the interim. For example, National Ambient Air Quality Standards (NAAQS) can have a number of years between the date on which a standard is announced and the date on which designations of attainment or nonattainment are made. In this case, if another rule is imminent and will take effect prior to the effective date of the new NAAQS, then it should be included in the baseline for the NAAQS. It is important, however, that the analyst not simply speculate that another rule will be implemented. Any other rule included in the baseline, other than those already promulgated, should be imminent or reasonably anticipated with a high degree of certainty. In addition, the analyst should be clear as to what assumptions have been made.

Including state rules that are legally required but not yet implemented: This is probably the most difficult case. Actions by state (and even local) governments can affect the costs and benefits of federal rules, particularly if they are regulating the same sector or pollutant. As with the case above, any state regulation that has been finalized should be included in the baseline. The more difficult case occurs when the state has a legal obligation to implement a regulation but either has not done so or is in the process of doing so. In this case, the analyst must use professional judgment to determine what would happen in the absence of EPA action. If the state would implement the regulation in the absence of EPA action, then a reasonable case can be made that this state regulation should be included in the baseline.

Two of the most important things to remember when sequencing multiple unlinked rules are transparency and objective reasoning. Transparency requires that the analyst clearly state all assumptions. Objective reasoning requires that the analyst not engage in speculation. If there is uncertainty about the anticipated rules, then two baselines, one with anticipated rules and one without, should be considered. If resources are constrained and only one baseline can be considered, then it should be constructed using only final rules and those that are reasonably expected with a high degree of certainty in the absence of EPA action.

Appendix 2: From Chapter 11 of the EPA Guidelines, describing the fact that all resource impacts should be included clearly in all summary tables (emphasis added).

Some guiding principles for constructing these tables follow.

• All meaningful benefit and costs are included in all of the tables even if . Not only does this provide consistency for the reader, but it also maintains important information on the context of the quantified and monetized benefits.
• The types of benefits and costs are described briefly in plain terms to make them clearer to the public and to decision makers, and they should be well-defined and mutually exclusive, to the extent possible. Benefits should be grouped a manner consistent with the categories in Table 7.1 of Chapter 7, although the order and specific characterization can be expected to vary by rule as needed.
• The benefits are expressed first in natural or physical units (i.e., number) to provide a more complete picture of what the rule accomplishes. These units are not discounted as they would be in a CEA because the goal here is to describe what might be termed the "physical scope" of the rule's . It may be the case that physical or natural units are not relevant for presenting costs.
• Explanatory notes accompany each benefit and cost entry and can be used to describe whatever the most salient or important points are about scientific uncertainty, the type of benefit or cost, how it is estimated, or the presentation.

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Director, Center for Agricultural and Rural Development, Iowa State University, 2013-2018
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President's Chair in Environmental Economics, Iowa State University, 2015-2018
Head, Resource and Environmental Policy Division, Center for Agricultural and Rural Development, Iowa State University, 1999-2017
Visiting Researcher, University of East Anglia, U.K., School of Environmental Sciences, Jan-July, 2009
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Associate Professor of Economics, Iowa State University, 1993-1996
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National Academy of Sciences, elected 2015
Fellow: Association of Environmental and Resource Economists (AERE), elected 2015
American Agricultural Economics Association (AAEA), elected 2006
University Fellow, Resources for the Future, 2015-2018
Committees of the National Academies of Engineering, Science, and Medicine:
Water Science and Technology Board, chair, 2017-2020; member 2012-2017
National Academies' Report Review Committee, 2018-2020
Committee on Improving Data Collecting and Reporting about Agriculture with Increasingly Complex Farm Business Structure, chair 2016-18
Committee on Scientific Tools and Approaches for Sustainability, member 2013-14

Planning Committee on Exploring the True Cost of Food, Institute of Medicine, 2011-12
Committee to Improve Federal Water Resource Planning, National Research Council, Water Science and Technology Board, 2010
Committee on Health, Environmental, and Other External Costs and Benefits of Energy Production and Consumption, National Research Council, 2008-2009
Agricultural Resource Management Survey Panel, National Research Council, 2006-07
Committee to Assess the U.S. Army Corps of Engineers Methods of Analysis and Peer Review for Water Resources Project Planning, National Research Council, 2002-2003

U.S. Environmental Protection Agency, Science Advisory Board:
Executive Board, 2003-2010, member
Agricultural Science Committee, 2016-2018, member, removed 2017
Environmental Economics Advisory Committee, 1998-2003, Chair, 2006- 2011
Committee on Science Integration for Decision Making, 2009-2010, member
Hypoxia Advisory Panel, 2006-2008, member and co-leader
Illegal Competitive Advantage Economic Benefit Advisory Panel, 2005

Advisory Committees and Other Board Service:
Center for Environmental Decision Making, Carnegie Melon, Advisory Board, 2016-
International Food Policy Research Institute (IFPRI), Board of Trustees, 2011-2016
ASU Decision Center for a Desert City, External Advisory Committee, 2014 -
Sustainable Management of Crop Health (SMaCH), French National Institute for Agricultural Research (INRA), Scientific Advisory Board, 2014 -
Leopold Center for Sustainable Agriculture, Advisory Board, 2014 -

Formal Mentoring Activities:
Mentor, Committee on the Status of Women in the Economics Profession, Regional meeting, Chicago, Ill, 2007; National meeting, Boston, MA, 2015
Invited speaker, ADVANCE Seminar and roundtable, University of Maryland, Fall 2013 and Texas A&M University, Spring 2014
Invited Speaker, University of Rhode Island faculty mentoring program, 2005

Association of Environmental and Resource Economists:
President Elect, 2010, President 2011-2012, Outgoing President 2013
Committee to Select Publication of Enduring Quality, Member, 2008-2010
Vice President, 2002-2003,
Board of Directors, 1996-98
Nominating Committee, 1991, Contributed Papers Committee, 1991-1992

Research Awards:
Bruce Gardner Memorial Prize for Applied Policy Analysis, Agricultural and Applied Economics Association, 2012
Outstanding Journal Article Award, ***Canadian Journal of Agricultural Economics***, 2007
College of Agriculture and Life Sciences Team Award, 2008
First place and "Best of Show" award, EPA Science Forum Poster Competition, Washington D.C., 2004
American Agricultural Economics Association Poster Competition, 2006 2nd place award, 2005 2nd place award, 2004 2nd place award, and 2003 1st place award
American Agricultural Economics Association, Quality of Research Discovery Award, Honorable Mention, 2000 and 2001
Western Agricultural Economics Association Outstanding Published Research, 1998

American Agricultural Economics Association:

Fellow's Address, annual meetings, Denver, CO, 2010
Fellow's Selection Committee, Member, 2008-2010, 2014-2016, Chair, 2016-
Nominating Committee, Member, 2008-2010, Board of Directors, Member, 2000-2003
Quality of Research Discovery Committee, 1996, Chair, 1994-1995, Member,
Selected Papers Committee, 1989, Co-Chair

Editorial Service:

Review of Environmental Economics and Policy, Editor, 2018- 2020, Editorial Board, 2015-2017
Proceedings of the National Academy of Sciences, Editor
Australian Journal of Agricultural and Resource Economics, Editorial Board, 2014-
Annual Review of Resource Economics, Editorial Board, 2012-
Encyclopedia of Energy, Natural Resource and Environmental Economics, Senior Editor, 2010 – 2014
Journal of Agricultural and Applied Economics, Editorial Council, 2010-
Applied Economics Perspectives and Policy, Editorial Board, 2009-
Land Economics, Editorial Board, 2001-
Journal of Agricultural and Resource Economics, Editorial Council, 2000 -
Journal of Environmental Economics & Management, Associate Editor, 1992-1993, Editorial Council, 1988-1991, 1998-2005
American Journal of Agricultural Economics, Associate Editor, 1994-1996

Resources for the Future:

Selection Committee for "Frontiers in Environmental Economics Conference," 2008
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Western Agricultural Economics Association:

M.S. Thesis Award Committee, 1992, Member,
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Kevin Meyer, 2017, Saginaw Valley State University, Michigan, Assistant Professor
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US Department of Agriculture, NRCS, "Monetizing Water Quality Benefits from the EQIP Program," 2017-2019 $150,000

Iowa Environmental Council." Economics of Clean Water in Iowa: Costs and Benefits of Pollution Reduction," 2017-2018 $25,000.

US Environmental Protection Agency, "Valuing Water Quality Improvements in Midwestern Ecosystems: Spatial Variability, Validity and Extent of the Market for Total Value," (Principal Investigator), 2016-2019, $800,000.

National Science Foundation, "FEW: Coupling Economic Models with Agronomic, Hydrologic, and Bioenergy Models for Sustainable Food, Energy, and Water Systems," (Principal Investigator), 2015, $46,000.

National Science Foundation, SESYNC, "The Value of Water Quality to Lake Recreation: Evidence from Geotagged Social Media," (Principal Investigator), 2015-2016, $70,740.

US Department of Agriculture, ERS, "Nudging in the Face of Risk and Ambiguity Aversion: Adopting Cover Crops to Reduce Nutrient Pollution," (Principal Investigator), 2015-17, $75,000.

US Department of Agriculture, NIFA, "The Value of Water Quantity vs Quality: Assessing the Tradeoffs between Agricultural yields and Downstream Uses of Water Resources," (co-Principal Investigator), 2015-2018, $660,000.

Iowa Department of Natural Resources, "Valuing Water Quality Improvements in Iowa Lakes, 2014" (Principal Investigator), 2014-2015, $130,000.

Iowa Nutrient Center, College of Agriculture and Life Sciences, Iowa State University. "Economic and Social Science Perspectives," (Principal Investigator), 2013-14, $116,000.

National Science Foundation, "Climate and Human Dynamics as Amplifiers of Natural Change: A Framework for Vulnerability Assessment and Mitigation Planning, (Principal Investigator,

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US Department of Agriculture, Policy Research Center, "The Center for Agricultural and Rural Development at Iowa State University," (Principal Investigator), 2012-2014, $768,000.

US Department of Agriculture, Bioenergy Coordinated Agriculture Program, National Institute of Food and Agriculture (co-Principal Investigator), 2011-2015, $300,000.

US Department of Agriculture, Climate and Corn-Based Cropping Systems Coordinated Agriculture Program, National Institute of Food and Agriculture (co-Principal Investigator), 2011-2015, $640,000.

National Science Foundation, "Northern Gulf of Mexico Hypoxia and Land Use in the Watershed: Feedback and Scale Interactions," (Principal Investigator), 2010-2012, $650,000.

US Department of Agriculture, NRCS, "Water Quality Benefits from Agricultural Conservation Actions and Programs," (Principal Investigator), 2010-2011, $50,000.

US Department of Agriculture, Economic Research Service, "The Supply of Greenhouse Gas Offsets from Agriculture and their Water Quality Effects in the Upper Mississippi River Basin," (Principal Investigator), 2010-2011, $100,000.

US Department of Agriculture, Economic Research Service, "Evaluating the Integrity of Agricultural GHG Offsets: The Costs and Consequences of Alternative Baselines and Program Options," (Principal Investigator), 2010-2013, $120,000.

US Environmental Protection Agency, "A Market Feasibility Assessment for Water Quality Trading and Reverse Auctions in the Raccoon River Watershed," (Principal Investigator), 2009-2010, $200,000.

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US Environmental Protection Agency, STAR grant, "A Market Feasibility Assessment for Reverse Auctions in the Boone River Watershed," (Principal Investigator), 2009-2010, $200,000.

Iowa Department of Natural Resources, "Economic Impact and Value of Preserving and Restoring Water Quality in Iowa's Lakes," (co-Principal Investigator), 2009-2010, $130,000.

Iowa Department of Natural Resources, "Understanding the Usage Patterns and Most Desirable Characteristics of Iowa's Rivers and Streams," (co-Principal Investigator), 2009-2010, $130,000.

Department of Energy, "Expansion of Ethanol Production: Evaluation of Costs and Benefits to Rural Communities in the Upper Mississippi River Basin," (co-PI) 2006-2010, $625,000.

National Science Foundation, "Social Complexity and the Management of the Commons," (Principal Investigator) 2006-2010, $250,000.

US Department of Agriculture, Natural Resource Conservation Service "Environmental Credit Trading Handbook," (Principal Investigator), 2006-2007, $84,000.

USDA/NASA "Interactive Drivers of Land-Use/Land-Cover Change in Agricultural Areas: Climate and Land-Manager Choices," (Principal Investigator), 2006-2008, $475,000.

Iowa Department of Natural Resources, "Restoring Water Quality in Iowa Lakes," 2006-2007 (co-Principal Investigator), $70,000.

Iowa Farm Bureau, Iowa Soybean Association, Iowa Corn Growers Association, and the Leopold Center, "Conservation Practices in Iowa: Historical Investments, Water Quality, and Gaps," (Principal Investigator), 2006, $75,000.

US Department of Agriculture, CSREES, "Water Resource Degradation in the Boone Watershed: Integrating Stakeholder Knowledge and Preferences with Economic and Watershed Models," (Principal Investigator), 2005-2008, $590,000.

National Science Foundation, "Biocomplexity of Integrated Perennial-Annual Agroecosystems," (co-Principal Investigator), 2005-2007, $100,000.

Cooperative State Research, Education, and Extension Service, USDA, "Economic and Water Quality Effects of Multiple Conservation Practices in Three Midwest Watersheds," 2004-2007 (Principal Investigator), $640,000.

US Environmental Protection Agency special grant (noncompetitive), "Resource and Agricultural Policy System," (Principal Investigator) over $2,500,000, 1999-2006.

Iowa State Water Resources Research Institute, "Improving Water Quality in Iowa Rivers: Cost-Benefit Analysis of Adopting New Conservation Practices," 2005-2006 (co-PI), $40,000.

Economic Research Service, USDA, "Improving Estimates of the Non-market Benefits of Conservation Programs," 2004-2005 (co-Principal Investigator), $70,000.

Iowa Department of Natural Resources, "Costs of Adopting Conservation Practices on Agricultural Cropland in Iowa and Possible Nutrient Standards," 2004 (PI) $53,000.

National Science Foundation/ Environmental Protection Agency Joint Competition, "Valuing Water Quality in Midwestern Lake Ecosystems: Temporal Stability and the Role of Information in Value Formation," 2002-2005 (co-Principal Investigator), $430,000.

Consortium for Agricultural Soils Mitigation of Greenhouse Gases (CASMGS), USDA, 2003-2004 (Principal Investigator), $1,300,000.

Iowa Department of Natural Resources, “Valuing Water Quality Improvements in Iowa Lakes,” 2002 (co-Principal Investigator), $81,000.

Environmental Protection Agency, "Heartland Environmental and Resource Economics Workshop," (Principal Investigator), 1999-2001, $65,000, 2002-2005, $65,000.

Miller Faculty Fellowship, Iowa State University, “Active Learning in Introductory Economics with a Focus on the Environment,” 1997-1998 (co-Principal Investigator), $17,000.

National Science Foundation/ Environmental Protection Agency Joint Competition, 1998, “An Examination of Utility Consistent Approaches to Modeling Corner Solutions in Recreation Demand,” 1998-2000 (co-Principal Investigator), $135,000.

National Science Foundation/ Environmental Protection Agency Joint Competition, 1996, “Updating Prior Methods for Non-Market Valuation: A Bayesian Approach to Combining Disparate Sources of Environmental Values,” 1996-1998 (co-Principal Investigator), $210,000.

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University-wide Energy Research Group, “Economic Efficiency of Marketable Credits for Alternative Transportation Fuels,” 1992-1993 (Principal Investigator) $24,000.

USDA Cooperative Agreement, “Economic Incentives to Reduce Agricultural Pollution of Water Resources,” 1990-92 (co-Principal Investigator), $120,000.

California Institute for Energy Efficiency, “The Use of Economic Incentives to Introduce Electric and Natural Gas Vehicles and Reduce Mobile Source Emissions,” 1990-92 (Principal Investigator) $180,000.

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PRESENTATIONS At conferences and professional meetings:

Agricultural and Applied Economics Association (former American Agricultural Economics Association), Agricultural Policy Forum, Agricultural Outlook Forum, Allied Social Sciences Association, Association of Environmental and Resource Economics, Annual Water Monitoring Conference, Australian Agricultural and Resource Economics Association, Camp Resources, Carbon Sequestration Modeling Forum, Catchment Scale Research and Evaluation for Agriculture and Water Quality (Dublin), Colorado Environmental and Resource Economics Workshop, Danish Environmental Economics Conference, Ecological Society of America, EPA

Conference on Water Quality in Major Rivers, Estuarine Research Federation, European Agricultural Economics Association, European Association of Environmental and Resource Economists, The Farm Bill and the Environment Workshop, Fate of the Earth Summit, RFF Frontiers of Environmental Economics, Collecting Global Expertise to Address the Problem of Harmful Algal Blooms, Global Environmental Frontiers Conference, Shanghai, Heartland Environmental and Resource Economics Conference, Iowa Environmental Council, Iowa Water Center, Workshop on Linking Biophysical and Economic Models of Biofuel Production and Environmental Impacts, Midwest Regional Wildlife Conference, Northeast Agricultural and Resource Economics Association Workshop, National Academy of Science Roundtable on Environmental Health, National Research Council Committees, National Bureau of Economic Research, National Science Foundation Workshop on Environmental Observatories, OECD Workshop on Evaluating Agri-Environmental Policies, Seed Science Convention, Soil and Water Conservation Society, Southern Economics Association, USDA-CSREES National Water Conference, Urban Ag Academy, UC Santa Barbara workshop on Marketable Permits, W-133 Regional Meetings, Western Agricultural Economics Association, Western Economics Association, World Congress of Environmental and Resource Economists.

PRESENTATIONS At universities and research institutions:

California Institute for Energy Efficiency, Arizona State University, Center for Earth Surface Dynamics (Minnesota), East Carolina University, Institute on the Environment (Minnesota), International Food Policy Research Institute (Washington DC), INRA (Rennes, France), Iowa State University, Michigan State University, North Carolina State University, The Ohio State University, Oregon State University, Pennsylvania State University, Resources for the Future, Texas A&M University, Triangle Resource and Environmental Economics Seminars, USDA Economic Research Service, USDA Natural Resource Conservation Service, University of Aarhus, (Roskilde, DK), University of Alberta, (Edmonton, CA), University of British Columbia, Vancouver, BC, University of California Davis, University of East Anglia (Norwich, UK), University of Florida, University of Georgia, University of Illinois, University of Iowa, University of Kansas, University of Maine, University of Maryland, University of Minnesota, University of Nebraska Lincoln, University of Oklahoma, University of Rhode Island, University of Tennessee, Knoxville, University of Toulouse (France), University of Wisconsin, Virginia Tech University.

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