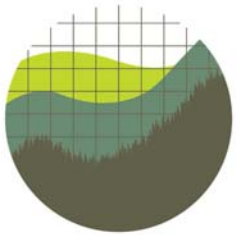

Institute *for*
Policy Integrity
NEW YORK UNIVERSITY SCHOOL OF LAW

May 29, 2019

VIA ELECTRONIC SUBMISSION

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Re: June 2019 Meeting of the Chartered Science Advisory Board, Proposed Waters of the U.S. Rule

The Institute for Policy Integrity ("Policy Integrity") at New York University School of Law[1] submits the following comments to the Chartered Science Advisory Board ("SAB") regarding EPA's Proposed Waters of the U.S. Rule ("proposed rule"), a topic which is on the agenda for the Public Meeting of the SAB on June 6, 2019, at 10:20 a.m.

Policy Integrity is a non-partisan think tank dedicated to improving the quality of government decisionmaking through advocacy and scholarship in the fields of administrative law, economics, and public policy. Policy Integrity has conducted a rigorous examination of the proposed rule and its accompanying economic analysis. On April 15, 2019, Policy Integrity submitted public comments to EPA and the Army Corps of Engineers detailing our findings.[2] Dr. Peter Howard and Dr. Jeffrey Shrader also submitted an evaluation of the proposed rule.[3]

As explained in our public comments and in the Howard & Shrader Expert Report, the proposed rule is fundamentally flawed as a result of multiple unjustified assumptions and multiple

[1] This document does not purport to present New York University School of Law's views, if any.
[2] *See* Policy Integrity Comments to the EPA and Army Corps of Engineers regarding the Revised Definition of "Waters of the United States," (April 15, 2019), **Attachment B** [hereinafter "Policy Integrity Comments"].
[3] An Evaluation of the Revised Definition of "Waters of the United States," by Peter Howard, PhD, Institute for Policy Integrity at NYU School of Law and Jeffrey Shrader, PhD, School of International and Public Affairs (SIPA) at Columbia (April 11, 2019), **Attachment A** [hereinafter "Howard & Shrader Expert Report"].

unjustified steps in the agencies' economic analysis. For example, the agencies have provided an unreasonable justification for ignoring multiple studies regarding the value of protecting wetlands[4] and arbitrarily ignored whole categories of wetlands benefits, such as the benefits that people assign to wetlands across a region.[5] In addition, among many other errors, the agencies' economic analysis is riddled with typos and the agencies' meta-analysis of wetlands benefits shows signs of serious econometric errors.[6]

In the proposed rule, the agencies' economic analysis shows net benefits for the proposed rule. But to satisfy their duty under the Administrative Procedure Act, the agencies must give an accurate and reasonable assessment of the costs and benefits of the proposed rule. And an accurate economic analysis of the proposed rule would likely show that the rule will compromise the integrity of the nation's waters, in a way that is net costly. The proposed rule is thus arbitrary and capricious under the Administrative Procedure Act. The attached comments as well as the attached expert report prepared by Dr. Peter Howard and Dr. Jeffrey Shrader, explain the flaws in the agencies' analysis in detail.

We strongly urge the SAB to review the attached materials in considering the proposed rule.

Respectfully,

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Attachments:

An Evaluation of the Revised Definition of "Waters of the United States," 84 Fed. Reg. 4,154 (proposed Feb. 14, 2019) by Peter Howard, PhD, Institute for Policy Integrity at NYU School of Law and Jeffrey Shrader, PhD, School of International and Public Affairs (SIPA) at Columbia (April 11, 2019)

Policy Integrity Comments to the EPA and Army Corps of Engineers regarding the Revised Definition of "Waters of the United States," 84 Fed. Reg. 4,154 (proposed Feb. 14, 2019), EPA–HQ–OW–2018–0149; FRL–9988–15–OW (April 15, 2019).

[4] *See* Howard & Shrader Expert Report at 2-7.
[5] *See* Howard & Shrader Expert Report at 10-12.
[6] *See* Policy Integrity Comments at 20-22.

ATTACHMENT A

An Evaluation of the Revised Definition of "Waters of the United States," 84 Fed. Reg. 4,154 (proposed Feb. 14, 2019) by Peter Howard, PhD, Institute for Policy Integrity at NYU School of Law and Jeffrey Shrader, PhD, School of International and Public Affairs (SIPA) at Columbia (April 11, 2019)

An Evaluation of the Revised Definition of "Waters of the United States," 84 Fed. Reg. 4,154 (proposed Feb. 14, 2019)

by Peter Howard, PhD, Institute for Policy Integrity at NYU School of Law and Jeffrey Shrader, PhD, School of International and Public Affairs (SIPA) at Columbia University

April 11, 2019

ABOUT THE AUTHORS

Dr. Peter Howard is the economics director at the Institute for Policy Integrity, where he specializes in climate change valuation and has recently published a meta-analysis of climate damages. He holds a Ph.D. in Agricultural and Resource Economics from the University of California, Davis, where his research focused on climate change, environmental policy, and agricultural policy. Howard also holds a B.A. from Bard College.

Dr. Jeffrey Shrader is an Assistant Professor at the School of International and Public Affairs (SIPA) at Columbia University. His research focuses on econometric identification and empirical analysis of questions in environmental and labor economics including the impacts of climate change, environmental effects on worker productivity, and business responses to environmental changes. He holds a Ph.D. in Economics from the University of California, San Diego, and a B.A., magna cum laude, from Columbia University. Shrader was an Economic Fellow at Policy Integrity from 2017-18.

ANALYSIS

I. Background

When the Environmental Protection Agency and Army Corps of Engineers issued the 2015 Clean Water Rule,[1] they provided an economic analysis showing the costs and benefits of the rule ("2015 Economic Analysis").[2] As part of that analysis, the agencies calculated the benefits of wetlands protection through a "unit benefits transfer approach," using values derived from a series of studies on the willingness to pay for a variety of ecosystem services provided by wetlands.[3]

Now, in the 2018 proposal to revise the definition of "waters of the united states,"[4] the agencies separate into two stages their analysis of the costs and benefits of withdrawing protections from wetlands. Stage 1 shows the agencies' calculation of forgone benefits and

[1] Army Corps of Engineers and EPA, Clean Water Rule: Definition of "Waters of the United States," 80 Fed. Reg. 37,054 (June 29, 2015).
[2] Army Corps of Engineers and EPA, *Economic Analysis of the EPA-Army Clean Water Rule* (2015) ("2015 Economic Analysis"), https://www.epa.gov/sites/production/files/2015-06/documents/508-final_clean_water_rule_economic_analysis_5-20-15.pdf.
[3] 2015 Economic Analysis 43-44.
[4] Army Corps of Engineers and EPA, Revised Definition of "Waters of the United States," 84 Fed. Reg. 4,154 (proposed Feb. 14, 2019) ("Proposed Replacement Rule").

cost savings of repealing the 2015 Clean Water Rule.[5] Stage 2 addresses the forgone benefits and cost savings of withdrawing even more protections from wetlands than were protected before the 2015 Clean Water Rule.[6] We address Stage 1 here.

In Stage 1, the agencies have reduced their estimate of the forgone benefits of repealing the Clean Water Rule relative to the original 2015 estimate of the Rule's benefits by excluding a set of valuation studies, which had originally been included in the agencies' 2015 analysis.[7] In the unit benefit transfer analysis of the 2015 Economic Analysis, the agencies used a set of ten contingent valuation ("CV") studies to calculate the benefits from protecting wetlands.[8] Now in the agencies' proposed revision, the agencies have included only four of those studies in a new unit benefits transfer analysis (the agencies added a single additional study, Newell and Swallow (2013), to the analysis).[9] In addition, the agencies calculated the wetlands values only for states that were either studied in those studies or were adjacent to those states. In this way, the agencies excluded the value of wetlands benefits in thirty states in the new unit benefits transfer analysis.[10]

The agencies also employed a new meta-analysis to calculate an alternative estimate for the national forgone benefits of Stage 1.[11] That meta-analysis is based on a 2018 working paper by Klaus Moeltner co-authors. The agencies' meta-analysis also leaves out the studies that were excluded from the alternative benefit transfer analysis.[12]

In both the agencies' new unit benefits transfer analysis and their meta-analysis benefits transfer analysis, the agencies have also refused to place a value on regional wetland benefits; instead, the agencies' new approach assumes that households within a given state only value the wetlands within that state's borders.

As we explain here, there are multiple problems with each piece of this analysis.

II. Study Exclusion in the Unit Benefits Transfer Analysis

As guidance from the Office of Management and Budget explains, "there is no mechanical formula that can be used to determine whether a particular study is of sufficient quality to justify use in regulatory analysis."[13] Instead, evidence should be weighed on its merits and the agencies should use all studies that include potentially valuable information to inform

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[5] EPA and Corps, Economic Analysis for the Proposed Revised Definition of "Waters of the United States" at 1 (2018) ("2018 Economic Analysis"), https://www.epa.gov/wotus-rule/proposed-revised-definition-wotus-supporting-documents.

[6] *Id.*

[7] 2018 Economic Analysis at 60-61.

[8] 2015 Economic Analysis at 45.

[9] 2018 Economic Analysis at 60-61, 68.

[10] *See id.* at 70.

[11] *Id.* at 70-71.

[12] *See id.* at 60-61, 71. The agencies exclude Poor (1999) in the benefit transfer analysis and include it in the meta-analysis. But the agencies explain that they intend to "refine" the meta-analysis and ultimately exclude Poor (1999) from the meta-analysis. *See id.* at 71.

[13] OMB, Circular No. A-4 at 23 (2003). Circular A-4 was originally issued under President George W. Bush and the current administration has instructed agencies to follow it. Office of Mgmt. & Budget, Memorandum: Implementing Executive Order 13,771, Titled "Reducing Regulation and Controlling Regulatory Costs" (Apr. 5, 2017).

the calculation of the costs and benefits of regulation.[14] It may be appropriate to conclude that different studies have different evidentiary weight and some studies may have features that make them less useful than other studies. But as explained by the editors-in-chief of five leading scientific journals, "[i]t does not strengthen policies based on scientific evidence to limit the scientific evidence that can inform them."[15] Rather than exclude studies, the agencies should place different weight on each study in proportion to that study's evidentiary value.[16] Indeed, the agencies took this approach in the 2015 Economic Analysis. In that analysis, the agencies weighted studies by their sample size, one measure of a study's evidentiary value.

Here instead of following those principles, the agencies have excluded six studies from the benefits transfer analysis to calculate the forgone benefits of Stage 1.[17] That decision contravenes best practices and lacks justification. We discuss each excluded study in turn.

a. Poor (1999)

The agencies exclude Poor (1999) because the study's results fail to find a significant scope effect and the study values unique wetlands.[18] But neither concern is a sufficient reason to exclude the study. Scope effect refers to the idea that if a group values a good or service, then the group will place a higher value on larger quantities of that good or service.[19] The agencies concede though, that for CV studies "[e]xternal scope is a high bar and rigorous test of validity that some otherwise well-designed studies do not achieve."[20] While best practice recommendations are to test for scope effects, there are a number of reasons, independent of design, which may result in the failure to find a significant scope effect,[21] including the declining marginal utility of the studied good, preconceptions about whether the government can actually deliver on the good, and non-monotonic views about the good.[22] All of these factors could be present here and though they may limit the ability to find a significant scope effect, they do not undermine the value of the study.

In addition, the fact that the study looked at unique wetlands is not a reason to exclude the study. The agencies could weight the study to take that issue into account instead. For example, in the meta-analysis, discussed further below, the agencies control for several variables related to the uniqueness of the wetlands.[23] Moreover, the wetlands studied by Poor—isolated wetlands without a continuous surface connection to other bodies of water—are exactly the type of wetlands at issue with this rule, so the willingness to pay for protection of these wetlands is relevant to this rule.

Moreover, Poor's study contains useful data and is of high quality overall. As Moeltner and his co-authors found, Poor (1999) contains the information necessary for "deriving

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[14] *See* Savage (1972); Executive Order 12291, 46 Fed. Reg. 13193 (Feb. 17, 1981).
[15] Berg, et al. (2018).
[16] For example, a study that has been successfully replicated could be assigned a higher evidentiary value.
[17] *See* 2018 Economic Analysis at 60-61.
[18] *Id.* at 61.
[19] Carson (2012), at 34.
[20] 2018 Economic Analysis at 61.
[21] Carson (2012), at 35.
[22] *Id*.
[23] *See* 2018 Economic Analysis at 73

willingness to pay estimates corresponding to a specific change in wetland acres."[24] In addition, the study adheres to a number of best practices for CV studies making its exclusion particularly inappropriate. For example, the survey instrument uses dichotomous choice surveys,[25] which are a recommended best practice.[26] In addition, the study's payment method is an increase in household taxes rather than voluntary contribution to a wetland preservation fund.[27] This method makes the study a high-quality study. As Richard Carson notes, contingent valuation studies that present respondents with some kind of coercive payment mechanism such as a tax are reliable because respondents are likely to believe that their responses have real personal consequences.[28] In addition, the study reports its results within a 95% confidence interval,[29] which is a best practice.

The choice of mean willingness to pay in the presentation of the survey results was not an "ad hoc" decision, as the 2018 Economic Analysis suggests, but instead was guided by inferences from the data and these values were reported with a 95% confidence interval.[30] In sum, the Poor (1999) study was a well-done study and it should not have been excluded from the agencies' updated benefits transfer analysis.

b. Azevedo et al. (2000)

The agencies exclude the Azevedo et al. (2000) study because that study does not present summary statistics or confidence intervals.[31] But the absence of that information does not necessarily reflect on the quality or reliability of the survey. In fact, it does not appear that the agencies used either factor in their analysis. If the agencies need the information, they should reach out to the authors to obtain it.

Moreover, several other factors point to the study's reliability. For example, the study, which was funded in part by a grant from the EPA,[32] used a dichotomous choice survey instrument to elicit willingness to pay for one of two wetland preservation projects.[33] As noted above, use of a dichotomous choice survey instrument is considered a best practice for conducting CV studies.[34]

The agencies also assert that it is "unclear" whether the study was peer reviewed, but that is not a sufficient reason to exclude the study.[35] EPA's Guidelines for Preparing Economic Analyses make clear that peer review is not a prerequisite to using a study.[36] And meta-analysis guidelines recommend that all research that meets the study selection criteria be

[24] Moeltner (2018), at 5.
[25] Poor (1999), at 254.
[26] Boardman, et al. (2018), at 451.
[27] Poor (1999), at 253, 254.
[28] Carson (2012), at 30-31.
[29] Poor (1999), at 259-61.
[30] *Id.* at 253, 259-61.
[31] 2018 Economic Analysis at 60.
[32] Azevedo (2000), at 17.
[33] *Id.* at 9-10.
[34] Boardman, et al. (2018), at 451.
[35] 2018 Economic Analysis at 60.
[36] United States Environmental Protection Agency ("EPA"), *Guidelines for Preparing Economic Analyses* at 7-52 (2010), https://www.epa.gov/sites/production/files/2017-08/documents/ee-0568-50.pdf.

included in the analysis, regardless of whether the research has been published.[37] Moreover, it can be useful to include studies that are not peer-reviewed. Published studies often have larger effect sizes than unpublished studies, and relying on them exclusively is not recommended as it can lead to the risk of "publication bias."[38] To avoid this problem, it can be very helpful to include non-peer-reviewed studies in an analysis. Indeed, 25% of the studies included in the agencies' meta-analysis are also not peer-reviewed.[39] And the Moeltner et al. study that the agencies rely on for the architecture of their meta-analysis is a working paper that has yet to be peer reviewed.[40]

Instead of excluding this study, the agencies should have weighted it appropriately to take into account the concerns that the agencies have flagged.

c. Dillman et al. (1993)

The agencies exclude the Dillman et al. (1993) study because it was not peer reviewed and uses a donation payment vehicle to value South Carolina wetlands.[41] But as explained above, the lack of peer-review does not mean that the study should be excluded. And while the payment methods used in the Dillman study are not considered as accurate as payment methods that lead survey participants to believe they could actually be forced to pay for the good at issue (e.g., though a tax),[42] that is also not a reason to exclude the study. In fact, one of the studies that the agencies rely on throughout the Stage 1 analysis, Whitehead & Blomquist (1991), also utilized a voluntary payment method.[43] The Dillman et al. (1993) and White & Blomquist (1991) studies are methodologically similar in other ways as well; they both use dichotomous choice surveys.[44] In light of the close methodological similarities between Dillman et al. (1993) and Whitehead & Blomquist (1991), excluding Dillman is arbitrary.

d. Johnson & Linder (1986)

The agencies excluded the Johnson and Linder (1986) study because the study's value estimations were derived solely from hunters.[45] But hunting is a common and important wetland use in many regions and thus it should not be ignored. For example, Whitehead & Blomquist (1991) found that of respondents who had actually been to the wetlands being valued in that study, over half had engaged in hunting;[46] in both Azevedo et al. (2000) and Poor (1999), hunting accounted for approximately 30% of respondents' wetland use.[47] The fact that the Johnson & Linder (1986) study focused on hunting is thus not a reason to exclude that study. Rather than exclude the study, the agencies should control for the

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[37] Borenstein, et. al. (2011).
[38] Ackerman & Stanton (2010), at 8-9; Havranek, et al. (2015), at 405.
[39] 2018 Economic Analysis at 72, Table III-6.
[40] *Id.* at 70-72, 216.
[41] *Id.* at 60-61.
[42] Carson (2012), at 31.
[43] Whitehead & Blomquist (1991), at 2527.
[44] *Id.* at 2523, 2527.
[45] 2018 Economic Analysis at 61.
[46] Whitehead & Blomquist, at 2527.
[47] Azevedo (2000), at 14-15, Figure 3; Poor (1999), at 258, Table 2.

uniqueness of this factor. The agencies are familiar with this technique. They controlled for similar uniqueness factors in the meta-analysis[48] and used a weighting procedure in the 2015 Economic Analysis.

e. Lant & Tobin (1989)

The agencies exclude Lant & Tobin (1989) because of its small sample size.[49] But the solution to this problem is to weight the study by its sample size or standard error, not exclude the study. Indeed, that is what EPA recommends in its guidance[50] and what the agencies did in the 2015 Economic Analysis.[51] The agencies have not explained why they cannot employ similar weighting procedures in the 2018 Economic Analysis. Absent a satisfactory explanation, the exclusion of the Lant & Tobin (1989) study is arbitrary.

III. Meta-Analysis

In the 2018 Economic Analysis, the agencies conducted a meta-analysis to assess national forgone benefits.[52] The agencies use a meta-analysis formula from a 2018 working paper by Moeltner et al. (2018) and derive the inputs for this formula from studies identified in a literature review in that working paper.[53] But there are several problems with the Moeltner working paper and with the way that the agencies applied the Moeltner meta-analysis to calculate a national estimate of the forgone benefits (the benefit transfer analysis).

a. Study Exclusion

For an optimal meta-analysis, an agency should select studies based on their relevance to the question at hand, and then weight their estimates by their evidentiary value to calculate an average, estimated effect.[54] As a leading textbook on meta-analysis explains, improperly excluding studies can result in bias and to avoid such bias, all research that meets the study selection criteria should be included in the analysis.[55] The agencies appear to have excluded studies in a way that violates this principle.

The Moeltner working paper identified 24 wetland valuation studies as "candidate studies" for the meta-analysis and then excluded seven studies for failing to identify a "clear link" between acreage and willingness to pay.[56] But the Moeltner study does not divulge the names of the seven excluded studies. As a result, it is impossible to verify that the exclusions were appropriate, making the meta-analysis potentially unreliable.

That said, though the working paper does not name the excluded studies, the working paper and 2018 Economic Analysis do list the studies that were *included* and thus it is possible to conclude that the agencies either have excluded or plan to exclude the same list

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[48] 2018 Economic Analysis at 73.
[49] *Id.* at 61.
[50] *See* EPA, *Report of the EPA Working Group on VSL Meta-Analyses*, Report EE-0494 (2006), https://www.epa.gov/sites/production/files/2018-02/documents/ee-0494-01.pdf.
[51] *Id.* at 72, 74, Appendix B.
[52] *Id.* at 70-71.
[53] *Id.* at 70-71.
[54] Hedges, & Olkin (1985), Chapter 14.
[55] Borenstein (2009).
[56] Moeltner (2018), at 4-5.

of studies from the meta-analysis that they excluded from the unit benefit transfer analysis. Whether or not those excluded studies were in the list of "candidate studies" and then excluded is not clear. As the list shows, the working paper does not consider Azevedo et al. (2000), Dillman et al. (1993), Johnson & Linder (1986), Land & Tobin (1989) and Roberts & Leitch (1997), five of the studies that were excluded from the agencies' unit benefit transfer analysis, discussed above. The working paper and 2018 Economic Analysis do include Poor (1999), a study that the agencies excluded from the unit benefit transfer analysis. But the agencies explain that they intend to "refine" the meta-analysis and ultimately exclude Poor (1999) from the meta-analysis.[57]

Assuming that the six studies were on the list of "candidate studies," their exclusion from the working paper's and the agencies' meta-analysis was arbitrary. The working paper claims that the unnamed excluded studies did not provide a "clear link" between willingness to pay and wetland acreage. But as the agencies' summary of studies used in the 2015 Economic Analysis makes clear, the six studies do provide estimates of willingness to pay that are relative to wetland acreage.[58]

And assuming the agencies take the position that these studies should be excluded in the meta-analysis for the same reasons they are excluded in the unit benefit transfer analysis, those reasons are not valid, as explained above. In fact, many of the reasons adduced by the agencies just do not apply in the meta-analysis context. Instead, those issues are factors that can be adequately addressed in a meta-analysis, without excluding the studies. For example, Azevedo et al. (2000) and Dillman et al. (1993) were excluded from the unit benefit transfer analysis because they were not peer reviewed and because they used a voluntary payment method. But, the working paper meta-analysis can and does control for those factors.[59] Thus, even assuming those were valid reasons to exclude the studies (and they were not, as discussed above), they certainly provide no reason to exclude the studies from the meta-analysis.

b. Problems with the meta-analysis

1. Sample size

As the working paper's authors concede, the sample size for the paper's meta-analysis was "small"[60] and an "unobserved confounding effect" could be skewing the results. In addition, the working paper's authors explain that reducing their "modest" sample size further "poses considerable identification problems."[61] Yet the agencies propose to exclude an additional study—Poor (1999)—which would reduce the sample size even further and compound these problems.

There are several problems with the small sample size. Given the small sample size and the fact that the agencies have used a high number of control variables when running the regression, the risk of multicollinearity is already high. If multicollinearity is present, that

[57] *See* 2018 Economic Analysis at 71.
[58] *Id.* at 66, Table III-2.
[59] *Id.* at 72 (listing peer-review and payment mechanism as variables in the meta-regression).
[60] Moeltner (2018), at 17.
[61] *Id.* at 8 & n. 3.

means that more than one explanatory variable may be linearly related, leading to imprecise and unstable results.

There are several indications that the small sample size is already causing significant problems with the agencies' estimation:

- The agencies' regression demonstrates that multiple variables are statistically insignificant, when those are variables that should be important.[62] For example, the regression shows that regional differences are not significant.[63] But regional differences are well documented.[64]
- As the Moeltner working paper points out, the "provisional" variable is unexpectedly negative. The working paper concedes that this could be due to the small sample size. In addition, it is a strong sign of omitted variable bias.

To fix these problems, the agencies should increase the sample size. One easy way to increase the sample size would be to include the excluded studies, mentioned above, along with all other relevant studies.[65]

The agencies should also conduct a model fitting exercise as well as a sensitivity analysis to assess the severity of these problems.

If the agencies fail to increase the sample size, they will still need to address the evidence of multicollinearity and omitted variable bias. In addition, the agencies should address the fact that the majority of the variables are insignificant. With such a small sample size, the agencies must explain why it is still acceptable to control for so many variables.

2. Statistical significance

Through a number of adjustments, the agencies have reduced the 2015 valuation of state-level wetlands benefits from $96.5-$106.9 million to $59 million in the 2018 estimate.[66] But the analysis shows that the new lower number is not statistically different from the higher, previous estimate. The upper boundary of the 2018 estimate's 95 percent confidence interval is $121 million implying that the 2015 estimate is within this interval.[67] As a result, according to the agencies' own analysis, it is not possible to say that the 2015 and 2018 values for state-level benefits are statistically significantly different at conventional levels of significance, even allowing for all of the agencies' 2018 methodological adjustments.

3. Application of the meta-analysis (benefit transfer)

In the 2018 working paper, the authors control for several values, including use value and local value.[68] In the 2018 Economic Analysis, agencies then apply those meta-analysis

[62] 2018 Economic Analysis at 73.
[63] *Id.* at 73.
[64] 2015 Economic Analysis at 50.
[65] *See* Jason Schwartz & Jeffrey Shrader, *Muddying the Waters* at 5-8 (2017), https://policyintegrity.org/files/publications/Muddying_the_Waters.pdf (discussing studies that should be included).
[66] 2018 Economic Analysis at 75-76; *see also* 2015 Economic Analysis at 53.
[67] 2018 Economic Analysis at 78.
[68] *Id.* at 73.

results to states in a new benefit transfer analysis.[69] In that benefit transfer analysis, the agencies use actual data for average income, regions, and "proportion of forested acres" to calculate the impact of those factors.[70] As for the local, provisional, regulatory, and cultural variables (marked as "local, "prov," "reg," and "cult"), the agencies have not explained how they set the variables when applying the regression results to the states. They have not explained whether they set those values at zero, the mean of the values found in the studies, or something else.

How the agencies set the value for those variables is crucial to understanding the validity of the agencies' benefit transfer analysis and its absence renders the analysis almost meaningless. Moreover, depending on what the agencies did, there could be a significant risk of undervaluation.

If the agencies used zero to set the value for those variables, that would mean that they vastly undercounted wetland benefits. Wetlands valuation is made up of both use value and non-use value. Use value is significant as people use wetlands for swimming, hunting, boating, and protecting drinking water supplies, along with many other uses.[71] The local, provisional, regulatory, and cultural variables include several important use values. For example, local is the value that nearby residents put on living near the wetland and regulatory is the value of ecological services provided by wetlands to individuals that benefit from them. The agencies controlled for those values in the regression and setting those values at zero in the benefit transfer analysis would mean that the value has been removed. But removing that value from the calculation would be an egregious error because it would mean that the agencies are ignoring an important factor in wetlands valuation.

If the agencies used something like the mean or the median of the values found in the studies, that is also a mistake. The local, provisional, and regulatory variables are all significant variables,[72] thus indicating that they are heterogeneous factors. In fact, the regression demonstrates that the "local" variable is the most significant variable in magnitude and significance.

Given the importance of these variables, to do a proper benefit transfer analysis for the states, the agencies should use actual state data in their analysis, as they did with average income, regions, and forested acres. To calculate the local variable, they can use the relevant local GIS data, which is easily accessible to them. That data would allow them to calculate the number of people that live near wetlands and use the wetlands and then calculate the state-by-state values accordingly.

Moreover, as explained above, the agencies have such a small sample size and so many control variables, that there is a strong potential for multi-collinearity in the benefit transfer analysis. This is highlighted by the fact that several of the control variables are insignificant and by the unexpected sign for the coefficient corresponding to provisional

[69] *Id.* at 77-78.
[70] *See id.* at 74.
[71] *See, e.g.*, Whitehead & Blomquist (1991), at 1; Loomis (1991), at 412.
[72] *See* 2018 Economic Analysis at 73.

services.[73] Yet the agencies are using these variables to make predictions at the state level, which can compound these problems further. The agencies should test how sensitive the variables are to including new data, to dropping some data points, and to changing control variables. The agencies should also report simple correlations between variables to help assess which variables are mostly likely to be collinear.

4. Convexity

As the 2018 working paper found, people value protecting wetlands more as the wetlands becomes larger.[74] If the baseline wetlands acreage in a state is 40,000, the values will be higher in that state than if the baseline is 10,000 acres. The agencies recognized this in the 2018 Economic Analysis, but to address the issue, the agencies set the baseline acreage at a low number—10,000 acres—the median value for baseline acres found in the Moeltner working paper.[75]

The median value is likely not an appropriate choice. As the Moeltner working paper found, freshwater wetlands range in size between 0 and 220,000 per state, with a *mean of 40,000*, four times higher than the 10,000 median figure. To illustrate the problem with using the median value, if 10,000 is the appropriate baseline estimate for the fifty states, that would mean that the United States has approximately 500,000 acres of wetlands total. But in reality, there are 100 million acres in the coterminous states[76] and close to 175 million acres in Alaska alone.[77]

Given the fact that the value people attribute to wetlands goes up as the wetland gets bigger, the 10,000 figure thus likely leads to a vast undercounting of the value placed on a significant number of larger wetlands. At the very least, the agencies should conduct a sensitivity test with the maximum acreage in a state and the 40,000 mean of the study estimates.

IV. Regional Benefits of Wetlands

In the 2015 Economic Analysis, the agencies used a "blended approach" to combine both state and regional wetland valuations into a single national valuation.[78] Regions were drawn in accordance with wetland region determinations made by the USDA's Economic Research Service.[79] The result was that for a given area of wetlands in State X, out-of-state households in the same wetland region were assumed to ascribe some positive non-use value to those wetlands. The 2015 Clear Water Rule justified the approach by explaining that "[w]hile we would expect use values for a given household to be largely contained

[73] See Moeltner (2018), at 17.
[74] *See id.*, at 30.
[75] 2018 Economic Analysis at 73.
[76] U.S. Fish & Wildlife Service, Report to Congress, Status and Trends of Wetlands in the Conterminous United States 2004 to 2009, https://www.fws.gov/wetlands/documents/Status-and-Trends-of-Wetlands-in-the-Conterminous-United-States-2004-to-2009.pdf.
[77] Alaska Dep't of Fish and Game, Wetlands, https://www.adfg.alaska.gov/index.cfm?adfg=wetlands.main
[78] 2018 Economic Analysis at 67.
[79] *Id.* at 62.

within the state where it is located, there is no reasonable justification for presuming that non-use values would only apply to wetlands contained within state boundaries."[80]

The agencies' 2015 conclusion is supported by the literature. First, science clearly establishes that water quality and downstream benefits can be linked due to water connectivity without regard to a state's boundaries.[81] Illinois wetlands that are hydrologically connected to the Mississippi River can have an impact on residents of downstream states, such as Missouri, Arkansas, and Tennessee.

Second, even putting aside downstream connections, existence or non-use values are an important and significant source of value for wetlands and those can transcend state boundaries. Existence or non-use values are "the value of a wetland resource received from the knowledge of wetland preservation, even without on-site or off-site use of the wetland."[82] Many of the studies that the agencies rely on in their 2018 Economic Analysis explain that non-use value is an important part of wetland valuation and frame their results as reflecting non-use values.[83] As Moeltner explained in a 2009 meta-analysis about wetlands valuation, only a small share of people studied had actually used the wetlands and the "lion's share of estimated economic benefits" in the studies he looked at was "likely associated with non-use or existence values."[84]

The studies relied on by the agencies also use out-of-state values to inform their results, demonstrating that people value out-of-state wetlands. For example, Blomquist & Whitehead (1998) included certain out-of-state households in the study of Kentucky wetlands.[85] Two of the excluded studies, Roberts & Leitch and Lant & Tobin (1989), conducted their studies using households outside of a single state.[86] In addition, there are a number of saltwater wetlands studies that make clear that people are willing to pay for wetlands across regional distances.[87]

Yet despite the significance of this value, in the 2018 Economic Analysis, the agencies did not include any regional use or non-use benefits.[88] While acknowledging that "wetlands can provide services and benefits to downstream waters beyond a state's boundaries," the agencies claim that a regional approach is inappropriate because the "the majority" of CV studies they relied on estimated willingness to pay only for wetlands inside the state.[89] But the fact that the "majority" of the CV studies calculate values inside a state does not mean that it is "inappropriate" to use them to calculate regional benefits.[90] Those studies provide

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[80] 2015 Economic Analysis at 50.
[81] *See* U.S. Environmental Protection Agency, Connectivity of Streams & Wetlands to Downstream Waters: A Review & Synthesis of the Scientific Evidence at ES-2 (2015), https://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=296414
[82] Blomquist & Whitehead (1991), at 2523.
[83] *See, e.g.*, Blomquist & Whitehead (1991), at 2523, 2527 (characterizing their results as reflecting primarily non-use values); Poor (1999), at 263 (finding a positive correlation between use and willingness to pay).
[84] Moeltner & Woodward (2009), at 95.
[85] Blomquist & Whitehead (1998).
[86] Lant & Tobin (1989), at 343; Roberts & Leitch, (1997), at 1-2.
[87] *See* Moeltner (2018), at 5; 2018 Economic Analysis at 71.
[88] 2018 Economic Analysis at 71.
[89] *Id.* at 67.
[90] Economic Analysis at 67.

estimates of non-use values that span large distances and do not establish or even suggest that those non-use values cannot cross state borders. Instead, the technique of using in-state numbers to estimate out of state values is well-recognized. In fact, the Moeltner and Woodward (2009) paper applies the meta-regression model to nearby county residents, Nevada residents, and Nevada and Utah residents.[91] Moreover, the agencies have a way of estimating the non-use values, as illustrated by the meta-analysis regression, and that method could be used to calculate numbers that would be appropriate for estimating regional non-use values.

The agencies also claim that including any regional benefits is "inappropriate" because using the USDA's Economic Research Service's wetland region determinations would apply willingness to pay values to wetland changes that are "thousands of miles away."[92] Even if the non-use values decrease over a large distance, that does not mean non-use values decrease to zero just on the other side of a state's border. The agencies must come up with some reasonable way of estimating regional wetland benefits and, despite the fact that some regions are quite large, using the USDA's Economic Research Service's wetland region determinations, as the agencies did in 2015, was a reasonable approach. In contrast, assigning zero to the regional value is not reasonable.

Indeed, the agencies themselves have included values for wetlands that are very far away from the individual who is valuing the wetland. The agencies' have included in-state non-use values by including all households within a state in the willingness to pay calculation, regardless of proximity to a given wetlands area.[93] For example, a household in western Texas would be deemed willing to pay for wetlands in eastern Texas, and vice versa, even though the state runs over 700 miles east to west.[94] The agencies' willingness to credit non-use values across large distances within a single state but not non-use value outside of that state is inconsistent and irrational.

In sum, setting the regional value at zero as the agencies have done lacks justification.

CONCLUSION

The agencies have committed a number of serious methodological errors in the new unit benefit transfer analysis and in applying the new meta-analysis to conduct an alternative benefit transfer analysis. These errors fundamentally undermine the reliability of their new calculations of the costs and benefits of repealing the Clean Water Rule.

[91] Moeltner and Woodward (2009), at 15.
[92] 2018 Economic Analysis at 62.
[93] *Id.* at 78.
[94] Craig Hlavaty, Amazing Facts: How Big is Texas?, *Houston Chronicle* (Nov. 18, 2014).

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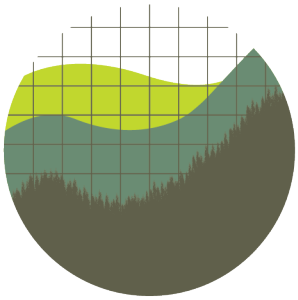
ATTACHMENT B

Policy Integrity Comments to the EPA and Army Corps of Engineers regarding the Revised Definition of "Waters of the United States," 84 Fed. Reg. 4,154 (proposed Feb. 14, 2019), EPA–HQ–OW–2018–0149; FRL–9988–15–OW (April 15, 2019).



Institute *for*
Policy Integrity
NEW YORK UNIVERSITY SCHOOL OF LAW

April 15, 2019

VIA ELECTRONIC SUBMISSION

Attn: Mr. Michael McDavit, Oceans, Wetlands, and Communities Division, Office of Water (4504–T), Environmental Protection Agency;
Ms. Jennifer A. Moyer, Regulatory Community of Practice (CECW-CO-R), U.S. Army Corps of Engineers

Re: Revised Definition of "Waters of the United States," 84 Fed. Reg. 4,154 (proposed Feb. 14, 2019)

Docket ID: EPA–HQ–OW–2018–0149; FRL–9988–15–OW

The Institute for Policy Integrity at New York University School of Law[1] ("Policy Integrity") respectfully submits the following comments to the Environmental Protection Agency (the "EPA") and the Army Corps of Engineers (the "Corps") (together, the "agencies") regarding proposed changes to the definition of "waters of the United States," which delineates the scope of federal regulatory authority under the Clean Water Act (the "CWA") (the "Proposed Replacement Rule").[2] Policy Integrity is a non-partisan think tank dedicated to improving the quality of government decision-making through scholarship in the fields of administrative law, economics, and public policy.

We write to make the following specific comments, as described more fully below:

- The agencies have not provided a reasoned explanation for imposing the costs, in the form of forgone benefits, of the Proposed Replacement Rule.
- The agencies' assumption that states will step in to fill the regulatory gap left by the Proposed Replacement Rule is unreasonable.
- The agencies' revaluation of wetland benefits is fundamentally flawed.
- The agencies' decision to ignore regional wetland benefits is arbitrary and capricious.

[1] This document does not purport to present New York University School of Law's views, if any.
[2] Army Corps of Engineers and EPA, Revised Definition of "Waters of the United States," 84 Fed. Reg. 4,154 (proposed Feb. 14, 2019) [hereinafter Proposed Replacement Rule].

- The agencies' bifurcated analysis and approach to unquantified forgone benefits unreasonably obscures the true impact of the Proposed Replacement Rule.
- The agencies have inadequately explained their estimates of avoided costs, and have inadequately explained why the Proposed Replacement Rule's alleged avoided costs justify all of the quantified and unquantified forgone benefits.

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I. Procedural History

On June 29, 2015, the agencies issued a final rule setting forth a new definition for "waters of the United States" under the CWA (the "2015 Clean Water Rule").[3] The 2015 Clean Water Rule sought to "ensure protection for the nation's public health and aquatic resources, and increase program predictability and consistency by clarifying the scope of 'waters of the United States' protected under the Act."[4] As a result of challenges in various courts, the 2015 Clean Water Rule is currently enjoined in 28 states,[5] but it remains in effect in 22 states, the District of Columbia, and U.S. Territories.[6]

On February 28, 2017, the President issued Executive Order 13,778, directing the agencies to review and rescind or revise the 2015 Clean Water Rule.[7] In March 2017, the agencies announced their intention to review and rescind or revise the 2015 Clean Water Rule in order to "provide greater clarity and regulatory certainty concerning the definition of 'waters of the United States,' consistent with the principles outlined in the Executive Order and the agencies' legal authority."[8]

On July 27, 2017, the agencies published a notice of proposed rulemaking to repeal the 2015 Clean Water Rule and recodify the regulatory text that governed prior to the promulgation of the 2015 Clean Water Rule (the "Proposed Repeal").[9] Policy Integrity, submitted a comment letter regarding the Proposed Repeal on September 27, 2017.[10] On July 12, 2018, the agencies published a supplemental notice of proposed rulemaking to clarify, supplement, and seek additional comment on the notice of proposed rulemaking to repeal the 2015 Clean Water Rule.[11] Policy Integrity submitted an additional comment letter regarding the supplemental proposal on August 10, 2018.[12] To the extent applicable,

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[3] *See* Army Corps of Engineers and EPA, Clean Water Rule: Definition of "Waters of the United States," 80 Fed. Reg. 37,054 (June 29, 2015) ("2015 Clean Water Rule").
[4] *Id.*
[5] *See North Dakota v. EPA*, 127 F. Supp. 3d 1047, 1051 (D.N.D. 2015); *Georgia v. Pruitt*, 326 F. Supp. 3d 1356 (S.D. Ga., 2018); *Texas v. EPA*, No. 3:15-cv-162, 2018 U.S. Dist. LEXIS 160443, at *4 (S.D. Tex., Sept. 12, 2018).
[6] *See* Proposed Replacement Rule at 4,162.
[7] *See* Exec. Order No. 13,778, Restoring the Rule of Law, Federalism, and Economic Growth by Reviewing the "Waters of the United States" Rule, 82 Fed. Reg. 12,497 (Mar. 3, 2017).
[8] Corps and EPA, Intention to Review and Rescind or Revise the Clean Water Rule, 82 Fed. Reg. 12,532 (Mar. 6, 2017).
[9] *See* Army Corps of Engineers and EPA, Definition of "Waters of the United States"—Recodification of Pre-Existing Rules, 82 Fed. Reg. 34,899 (proposed July 27, 2017) ("Proposed Repeal").
[10] *See* Institute for Policy Integrity, Comment Letter: Comments on the Proposed Definition of "waters of the United States"—Recodification & on the Underlying Economic Analysis, Dkt. No. EPA-HQ-OW-2017-0203, 82 Fed. Reg. 34,899 (proposed July 27, 2017) (September 27, 2017), *available at* https://policyintegrity.org/documents/IPI_WOTUS_comments.pdf.
[11] *See* Army Corps of Engineers and EPA, Definition of "Waters of the United States"—Recodification of Preexisting Rule, 83 Fed. Reg. 32,227 (proposed July 12, 2018).
[12] *See* Institute for Policy Integrity, Comment Letter: Comments on the Supplemental Notice of Proposed Replacement Rulemaking, Definition of "waters of the United States"—Recodification of the Preexisting Rule,

Policy Integrity's prior comments on the Proposed Repeal are incorporated by reference herein.

On February 6, 2018, the agencies issued a final rule adding an "applicability date" of February 6, 2020 to the 2015 Clean Water Rule (the "Suspension Rule").[13] In the Suspension Rule, the agencies clarified that they will "continue to implement nationwide the previous regulatory definition of [WOTUS], consistent with the practice and procedures the agencies implemented long before and immediately following the 2015 Clean Water Rule pursuant to the [court injunctions]."[14] On August 16, 2018, the U.S. District Court for the District of South Carolina enjoined the Suspension Rule nationwide.[15] On November 26, 2018, the U.S. District Court for the Western District of Washington vacated the Suspension Rule nationwide.[16]

On February 14, 2019, the agencies issued the Proposed Replacement Rule, which purports to "increase CWA program predictability and consistency by increasing clarity as to the scope of [jurisdictional waters] . . . while respecting State and tribal authority over their own land and water resources."[17] Most notably, the Proposed Replacement Rule: excludes ephemeral streams from CWA jurisdiction;[18] alters the 2015 Clean Water Rule's definition of "adjacent" wetlands;[19] removes and adds various independent categories within the definition of "waters of the United States;"[20] and eschews an inquiry into whether certain waters may be deemed jurisdictional as a result of having a "significant nexus" with jurisdictional waters.[21]

Dkt. No. EPA-HQ-OW-2017-0203, 83 Fed. Reg. 32,227 (proposed July 12, 2018) (August 10, 2018), *available at* https://policyintegrity.org/documents/Clean_Water_Rule_Supplemental_NPR_Comments_081018.pdf.

[13] *See* Army Corps of Engineers and EPA, Definition of "Waters of the United States" – Addition of an Applicability Date to 2015 Clean Water Rule, 83 Fed. Reg. 5,200 (proposed February 6, 2018) ("Suspension Rule").

[14] *Id.* at 5,201.

[15] *See South Carolina Coastal Conservation League v. Pruitt*, No. 2-18-cv-330-DCN, 2018 U.S. Dist. LEXIS 138595 (D.S.C., Aug. 16, 2018).

[16] *See Puget Soundkeeper Alliance. v. Andrew Wheeler*, No. C15-1342-JCC, 2018 U.S. Dist. LEXIS 1999358 (W.D. Wash., Nov. 26, 2018).

[17] Proposed Replacement Rule at 4,154.

[18] *See id.* at 4,204.

[19] *Compare* 80 Fed. Reg. at 37,105 *with* 84 Fed. Reg. at 4,204.

[20] *See generally* 84 Fed. Reg. at 4,169-4,195.

[21] *See* 84 Fed. Reg. at 4,170.

II. The Agencies Have Not Provided A Reasoned Explanation for the Decision to Cause Costs in the Form of Forgone Benefits

A. The Agencies Are Required to Provide a Reasoned Explanation for Imposing the Costs of the Proposed Replacement Rule

Under the arbitrary and capricious standard of the Administrative Procedure Act,[22] 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."[23] Courts will reverse where an examination of the agency's explanation makes clear that the agency failed to consider "an important aspect of the problem."[24]

In issuing the 2015 Clean Water Rule, the agencies found that the benefits of the rule exceeded the costs by a ratio of greater than 1:1. In calculating the rule's costs and benefits, the agencies assessed two different scenarios showing a smaller and larger increase in protected waters. For the more conservative scenario where a smaller amount of waters receive protection, the agencies estimated annual costs in a range of $158M-$307M and annual benefits in the range of $339M-$350M.[25] As such, the 2015 Clean Water Rule promised net benefits.

In the Proposed Replacement Rule, the agencies have proposed to reverse course on the protections implemented in the 2015 Clean Water Rule and to protect even fewer waters than were protected before the 2015 Clean Water Rule. That decision will cause costs, in the form of forgone environmental protections. Thus, an important aspect of the problem that the agencies must consider and address here is the cost of the Proposed Replacement Rule, in the form of the forgone benefits.[26]

Moreover, the Clean Water Act's overarching goal is the "[r]estoration and maintenance of chemical, physical and biological integrity of Nation's waters."[27] And the agencies must explain whether imposing the costs of the Proposed Replacement Rule is consistent with the agencies' statutory mandate.[28]

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[22] 5 U.S.C. § 706(2)(A).
[23] *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983).
[24] *Id. See also F.C.C. v. Fox Television Stations, Inc.*, 556 U.S. 502, 515 (2009).
[25] 80 Fed. Reg. at 37,101.
[26] *State Farm*, 463 U.S. at 43; *Air Alliance Houston v. EPA*, 906 F.3d 1049 (D.C. Cir. 2018) (holding that the agency's failure to address the forgone benefits of the rule was arbitrary and capricious); *cf. Nat'l Ass'n of Home Builders v. EPA*, 682 F.3d 1032, 1039 (D.C. Cir. 2012) (finding that the agency properly calculated the costs of amending a regulation); *Mingo Logan Coal Co. v. EPA*, 829 F.3d 710, 730 (D.C. Cir. 2016) (Kavanaugh, J., dissenting) (considering the costs of a repeal is "common sense and settled law").
[27] Federal Water Pollution Control Act, 33 U.S.C. § 1251.
[28] *See Michigan v. EPA*, 135 S. Ct. 2699, 2707 (2015) ("reasonable regulation ordinarily requires paying attention to the advantages and disadvantages of agency action"); *New York v. Reilly*, 969 F.2d 1147, 1153

And lastly, to the extent that the agencies are now relying on their economic analysis to justify the Proposed Replacement Rule,[29] "a serious flaw undermining that analysis can render the rule unreasonable."[30] Moreover, when issuing an economically significant regulatory action, such as this one, Executive Order 12,866 requires agencies to assess the costs and benefits, including, but not limited to, "any adverse effects on . . . health, safety, and the natural environment."[31] This assessment should be based "on the best reasonable obtainable scientific, technical, economic, and other information."[32]

B. The Agencies have Not Provided a Reasoned Explanation for Imposing the Costs of the Proposed Replacement Rule

The agencies have not satisfied these standards. Though the agencies have produced an economic analysis purporting to show the forgone benefits of the proposed rule, that analysis undercounts the forgone benefits at each stage in ways that contravene the literature and disregard important factors. In this way, the agencies have produced a biased and lopsided economic analysis that fails at its main task—to provide a picture of the proposal's costs and benefits.

In fact, with those mistakes fixed, it is very likely that the proposal would be net costly. The agencies have provided the economic analysis in two stages (we critique the two-stage approach below). Stage 1 shows the agencies' calculation of forgone benefits and cost savings of repealing the 2015 Clean Water Rule.[33] Stage 2 addresses the forgone benefits and cost savings of withdrawing even more protections from wetlands than were protected before the 2015 Clean Water Rule.[34] Looking at the monetized costs and benefits of those two stages together, the agencies make it appear that the Proposed Replacement Rule is net beneficial in a majority of the projected outcomes. But even according to the agencies' own calculations, there is a scenario in which this is not the case. Using the agencies' low estimate of avoided costs and their high estimate of forgone benefits in Stage 1 for all states (scenario 0), the repeal of the 2015 Clean Water Rule is only net beneficial by $60.5

(D.C. Cir. 1992) (remanding rule where agency failed to explain how economic benefits would justify forgoing promised air benefits).

[29] *See, e.g.*, 84 Fed. Reg. at 4,168 (explaining that the agencies are proposing the rule in order to "improve regulatory predictability and certainty and ease administrative burden while still effectuating the purposes of the [Clean Water] Act").

[30] *Nat'l Ass'n of Home Builders v. EPA*, 682 F.3d 1032, 1040 (D.C. Cir. 2012); *see also Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (arbitrary and capricious standard requires agency to "examine the relevant data" and "articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made" (internal quotation marks omitted)).

[31] Exec. Order No. 12,866 § 6(a)(3)(C), Regulatory Planning and Review, 58 Fed. Reg. 51,735 (Oct. 4, 1993).

[32] *Id.* §§ 1(b)(7).

[33] EPA and Army Corps of Engineers, Economic Analysis for the Proposed Revised Definition of "Waters of the United States" at 1 (2018) ("2018 Economic Analysis"), https://www.epa.gov/wotus-rule/proposed-revised-definition-wotus-supporting-documents.

[34] *Id.*

million.[35] In the national analysis of section 404 permits in the Stage 2 analysis, when the low estimate of avoided costs for all states except Hawaii is combined with the high estimate of forgone benefits for all states except Hawaii, Stage 2 is net costly by $63.8 million.[36] Putting those two stages and scenarios together shows that the Proposed Replacement Rule is not cost-benefit justified against the legal status quo of the 2015 Clean Water Rule. In other words, in Scenario 0, a possible scenario identified by the agencies, the rule is net costly—even leaving all of the agencies' other analytical mistakes in place.

As we discuss below, Scenario 0, where states do not fill the regulatory gap left by the Proposed Replacement Rule, is the most likely scenario.[37] And the agencies' analysis contains several other serious flaws, which if corrected would increase the forgone benefits across the various scenarios and stages. For example, the agencies have left out any estimate of the value of wetlands across regions. But as we explain below, that value is incontrovertible and leaving it out was unjustified.[38] Similarly, correcting the agencies' errors in the unit benefit transfer analysis or the meta-analysis could significantly increase the estimates of forgone benefits.[39] Moreover, the agencies have refused to quantity a significant amount of the Stage 2 forgone benefits.[40] The agencies have also inadequately explained their estimates of cost savings and may have failed to consider how the availability of compliance flexibilities reduce those cost savings. Given that the cost-benefit analysis is already so close to the line, especially in the most likely scenarios, correcting any one of these errors would likely tip the scales and show that the forgone benefits of the Proposed Replacement Rule outweigh the costs.

Seen from this perspective, it appears as though the agencies have taken multiple unjustified steps and made unjustified assumptions, all with the goal of ensuring that the economic analysis shows net benefits for the Proposed Replacement Rule. But to satisfy their duty under the Administrative Procedure Act, the agencies must give an accurate and reasonable assessment of the costs and benefits of the proposal. This "requirement of reasoned decisionmaking . . . prevents officials from cowering behind bureaucratic mumbo-jumbo."[41] And a lopsided, inaccurate, and results-driven analysis does not satisfy that requirement.[42]

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[35] *Id.* at 222, Table B-1.
[36] *Id.* at 207-08, Tables IV-60 and IV-61.
[37] *See* Section III.
[38] *See* Section IV.
[39] *See* Section IV.
[40] *See* Section V.
[41] *Competitive Enter. Inst. v. Nat'l Highway Traffic Safety Admin.*, 956 F.2d 321, 326-27 (D.C. Cir. 1992).
[42] *See Air Alliance Houston v. EPA*, 906 F.3d 1049, 1067 (D.C. Cir. 2018) (vacating delay rule for failure to provide a reasoned explanation for forgoing benefits of Chemical Disaster Rule); *California v. U.S. Bureau of Land Management*, 277 F. Supp. 3d 1106, 1122 (N.D. Cal. 2017) (vacating delay rule because the agency had agency had arbitrarily failed to consider the forgone benefits caused by the delay); *New York v. Reilly*, 969 F.2d 1147, 1153 (D.C. Cir. 1992) (remanding rule where agency failed to explain how economic benefits would justify forgoing promised air benefits); *Sierra Club v. Sigler*, 695 F.2d 957, 979 (5th Cir. 1983) (holding,

Even more fundamentally, the agencies claim that they have chosen a reasonable interpretation of the statute.[43] But given that a reasonable analysis of the costs and benefits of the Proposed Replacement Rule demonstrates that the rule would remove protections and compromise the integrity of the nation's waters, in a way that is likely net costly, the proposed approach cannot be within the range of reasonable options available to the agencies.

III. The Agencies' Decision to Reduce the Forgone Benefits Based on Assumptions about State Response Scenarios Is Fundamentally Flawed

In the 2018 Economic Analysis, the agencies reduced their estimate of the forgone benefits of repealing the Clean Water Rule relative to the original 2015 estimate of the Rule's benefits by assuming that some states would make regulatory decisions to fill the gap left after the Proposed Replacement Rule removes protections from the waters at issue.[44] The agencies assert that the result of states adopting "regulations equivalent to existing federal regulation" will be "no impact" on forgone benefits, and that states adopting "alternative . . . regulatory coverage" will actually lead to a "net benefit increase."[45]

But lowering the overall estimate of forgone benefits based on the assumption that contingent and uncertain state responses will fill the gap after the agencies cause harm to wetlands and other bodies of water is not an accepted method for calculating the forgone benefits. And even if the method were appropriate, the states are required to provide more than just "conclusory or unsupported suppositions" that states will fill the gap.[46] The agencies' assumptions here are unsupported and wholly speculative and do not meet this standard. As such, the agencies should increase the estimate of forgone benefits to account for the full forgone benefits in all states.

A. The State Response Analysis Is Not an Accepted Means of Accounting for Regulatory Impacts in a Cost-Benefit Analysis

Federal agencies' economic analyses generally should not reduce forgone benefits based on assumptions about speculative state action, which may or may not be taken in response to the federal agencies' own decisions to roll back a rule; rather, only those state regulations that were in place *ex ante* or are reasonably certain to be implemented should be considered. For example, EPA Guidelines contemplate incorporating the "impact of other

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with respect to an environmental impact statement, that when an agency "trumpet[s]" the economic benefits of a project, it must also disclose costs, and that "logic, fairness, and the premises of cost-benefit analysis, let alone NEPA, demand that a cost-benefit analysis be carried out objectively"); *Johnston v. Davis*, 698 F.2d 1088, 1094-95 (10th Cir. 1983) (remanding an environmental study because it made "no mention" of a crucial factor that would make the action net costly).

[43] 84 Fed. Reg. at 41,69.

[44] 2018 Economic Analysis at 56-59.

[45] 2018 Economic Analysis at 28.

[46] *NetCoalition v. SEC*, 615 F.3d 525, 539 (D.C. Cir. 2013).

rules *currently under consideration*" if they "fundamentally affect[ ] the economic analysis."[47] As another example, "if an industry is certain to be regulated (e.g., by court order or congressional mandate) but that regulation has not yet been implemented" an agency should include the benefits of those regulations in the baseline.[48] In those cases, "multiple scenarios, with and without these rules in the baseline, *may* be necessary."[49]

But here, the agencies have not examined the impact of regulations that are currently under consideration or certain to be implemented. Instead, the agencies have reduced the forgone benefits due to assumptions about state rulemakings that are not currently pending. Indeed, those rulemakings are not currently necessary and only become necessary if the agencies roll back protections that currently protect those waters. It is a fundamental flaw to assume that states will take steps to protect the newly damaged waters, when those steps are necessary only because the agencies have decided to cause the harm.

B. Even If the State Response Analysis Were a Valid Approach, the Agencies' Assumption that States will Respond to Fill the Gap Ignores Important Factors

The agencies' assumptions that states will fill the gap are based on three variables: (1) whether the state is authorized to administer the NPDES program, or the presence of an analogous state-level dredge-and-fill permitting program ("state level dredged and fill program"); (2) the breadth of the state's coverage of waters subject to regulation ("regulate waters more broadly than CWA"); and (3) the state's self-imposed legal restrictions on regulating waters ("legal limitations").[50] According to the agencies, analyzing the legal landscape in this way can show whether a state is likely to respond by regulating the waters that will no longer be protected under the federal Clean Water Act.[51]

But even if reducing the forgone benefits based on assumptions about state responses were appropriate as a theoretical matter, the agencies' analysis ignores several significant factors that make it unlikely that states will act in ways in line with the agencies' assumptions. Given the presence of these factors, the legal landscape is not a sufficient basis for the agencies' decision that states will fill the gap.

1. Cross-border externalities

Because of interstate environmental externalities, a state can send pollution across state lines, thereby obtaining the labor and fiscal benefits of the economic activity that generates the pollution, but not suffering the full costs of that activity. The result is an undesirably

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[47] EPA's Guidelines for Preparing Economic Analyses at 5-2 (emphasis added), https://www.epa.gov/environmental-economics/guidelines-preparing-economic-analyses.
[48] *Id.* at 5-3.
[49] *Id.* (emphasis added).
[50] *See* 2018 Economic Analysis at 39-40, 42-43.
[51] *Id.* at 39-40.

large amount of pollution crossing state lines.[52] Because states have little incentive to internalize out-of-state externalities, it is irrational to expect that state-level coverage in the wake of the proposed rollback would be identical to the baseline with respect to interstate waters and other out-of-state effects.

Water is a prime example of a resource that can and often down cross states boundaries and where pollution can be sent downstream. For that reason, federal regulation under the Clean Water Act provides a clear advantage over state action in regulating waters carrying pollution across state lines.[53] Indeed, in the 2015 Clean Water Rule, the agencies specifically included interstate waters as a covered category of "waters" to fulfill the congressional intent to cover "waters that *flow across*, or form a part of, state boundaries,"[54] having concluded that "the Federal Government is in the best position to address issues which may arise when waters cross state boundaries."[55]

But now, not only does the Proposed Replacement Rule eliminate interstate waters as a specifically covered category of waters, but the agencies also irrationally expect states to fill the gap and cover interstate waters on their own. Yet the assumption that states will adopt "equivalent" regulations that will mimic current federal coverage and so result in $0 in forgone benefits is directly undercut by the agencies' admission that states are "less likely to consider benefits that accrue outside of their borders."[56] Perhaps not surprisingly,

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[52] *See* Richard L. Revesz, *Federalism and Interstate Environmental Externalities*, 144 U. Pa. L. Rev. 2341, 2343 (1996).

[53] *See, e.g.*, David A. Dana, *One Green America: Continuities and Discontinuities in Environmental Federalism in the United States*, 24 Fordham Envtl. Law Rev. 103, 105 (2013) ("The emissions of pollutants crossing state boundaries or polluted water travelling downstream is the paradigmatic case on which there is the broadest normative agreement for a leading role for federal environmental law and governance. Indeed, obvious, readily identifiable cross-boundary transport of indisputably harmful pollutants via water and air is an area where even those theorists and commentators who are highly critical of the federalization of environmental governance see an appropriate role for the federal government.").

[54] 2015 Clean Water Rule, 80 Fed. Reg. 37,054, 37,074 (June 29, 2015) (citing Pub. L. 80-845, sec. 10, 62 Stat. 1155, at 1161 (1948)); *see also id.* at 208-11 (noting the Court's acknowledgement of the need for federal law to resolve interstate water pollution disputes), 211-15 (distinguishing *Rapanos* and *SWANCC* as not limiting CWA jurisdiction over non-navigable interstate waters), 216-23 (citing legislative history indicating support for the agencies' inclusion of "interstate waters" as an individual category) (citations omitted); *see also* ("It would contravene Congress' clearly stated intent for a court to impose an additional jurisdictional requirement on all . . . waters that flow across . . . state boundaries . . . . Nor would all the existing water quality standards be 'carry[ing] out the purpose of this Act,' if the only water quality standards that could be implemented through the Act . . . were those . . . established for interstate waters that . . . connect to waters that are navigable . . .") (citations omitted).

[55] EPA and Corps, Definition of "Waters of the United States" Under the Clean Water Act, 79 Fed. Reg. 22,188, 22,259 (proposed Apr. 21, 2014).

[56] 2018 Economic Analysis at 45.

the Proposed Replacement Rule concedes that it will protect fewer interstate waters than the 2015 Clean Water Rule.[57]

In short, because interstate externalities provide a particularly compelling case for federal versus local regulation, the agencies' assumption that states will seamlessly fill the gap with respect to interstate waters is not justified, and their analysis of forgone benefits is biased.

2. Resource constraints

States have significant resource constraints that limit their ability to take on new enforcement responsibilities, which makes the agencies' assumptions about state responses inappropriate. States already account for the bulk of enforcement activity,[58] and they frequently fail to meet national enforcement goals for their existing responsibilities.[59] Despite pleas from state regulators for increased federal aid to help meet the goals, EPA grants to states have actually *declined* in recent years, sometimes exacerbated by *state* legislatures reducing funding to state environmental agencies as well.[60]

The agencies concede that "state enforcement capability would also possibly be important in determining state responses," but claim that "no measure of enforcement capability was available for use in this analysis."[61] As such, they assume full compliance with the imagined state provisions.[62]

But there is information that the agencies could look at to determine whether a state is capable of filling the gap—for instance, states' current budget allocations and staffing resources directed towards water regulation. And that data will likely show that states do

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[57] *See* Proposed Replacement Rule, 84 Fed. Reg. at 4,172. The agencies further implicitly concede that the Proposed Replacement Rule will protect fewer interstate waters than were protected under pre-2015 practice: specifically, the agencies claim that "most waters" that were deemed jurisdictional as interstate waters under pre-2015 practice would "likely" remain jurisdictional under the Proposed Replacement Rule, as they would fall within one of the other proposed categories. Nevertheless, the preamble's discussion of nearly all other categories concludes that fewer waters would be deemed jurisdictional under the Proposed Replacement Rule as compared to pre-2015 practice. *Id.*; *see also* RPA at 37 (impoundments), 38-39 (tributaries), 41 (ditches), 42-43 (lakes and ponds), 44-45 (wetlands).

[58] *See* States Defend Environmental Record, Pew, https://www.pewtrusts.org/research-and-analysis/blogs/stateline/2001/05/14/states-defend-environmental-record (quoting a report by the Environmental Council of the States as estimating that states bring "about 90 percent of environmental enforcement actions each year.").

[59] *See* U.S. EPA Office of the Inspector General, 12-P-0113, EPA Must Improve Oversight of State Enforcement 8 (2011), *available at* https://www.epa.gov/sites/production/files/2015-10/documents/20111209-12-p-0113.pdf) (concluding that state enforcement efforts were both inadequate and inconsistent).

[60] *See, e.g.*, Marie Cusick, *EPA cuts would leave states with more work, less money*, NPR (Apr. 7, 2017), *available at* https://stateimpact.npr.org/pennsylvania/2017/04/07/epa-cuts-would-leave-states-with-more-work-less-money.

[61] 2018 Economic Analysis at 39 n.47. *See also id.* at 42 n.49.

[62] *Id.* at 39 n.47.

not have the staff or resources to fill the gap. Nebraska and Nevada, for example, are classified as potentially increasing protections, despite each having fewer than one full-time employee devoted to section 401 certification,[63] and despite the fact that Nebraska has no system of state permitting for dredge and fill activities at all.[64]

3. State-level political factors

Local political factors will also cause states to be unable to fill the gap. A state "may be reluctant to adequately penalize its jurisdiction's largest and most politically powerful industrial facilities."[65] Local enforcers can be more "vulnerable to pressures from elected officials or interest groups, pleas of economic hardship from violators, enforcement budget constraints, and too-close relationships between regulators and regulated entities."[66] As the agencies noticed in their federalism review, there is "evidence that local special interests influence enforcement effort when national policy is delegated to the state level."[67]

Moreover, as a former head of EPA's Office of Enforcement and Compliance Assurance has explained, many significant violators are national companies with operations in multiple states and individual states filing cases one at a time is inefficient and may lead to inconsistent results.[68] In contrast, EPA has a comparative advantage in enforcing environmental regulations against such companies.[69]

Having EPA involved at the national level is also necessary to ensure that any existing local enforcement achieves its ends. Federal enforcement can act as a "backstop" preventing private companies from resisting state regulators, since they may fear that "if they don't resolve their enforcement problems at the state level, they may have to face the EPA instead."[70] But in the absence of federal regulations, companies will be emboldened to fight

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[63] Association of State Wetland Managers. Status and Trends Report on State Wetland Programs in the United States (2015) at 69-70 (last updated Mar. 6, 2016).
[64] *Id.* at 106, 127.
[65] Policy Integrity. Irreplaceable: Why States Can't and Won't Make Up for Inadequate Federal Enforcement of Environmental Laws (2017) at 3, https://policyintegrity.org/files/media/EPA_Enforcement_June2017.pdf.
[66] Mark Atlas, Enforcement Principles & Environmental agencies: Principal-Agent Relationships in a Delegated Environmental Program, 41 Law & Soc'y Rev. 939, 942 (2007); see also Eric Helland, The Revealed Preferences of State EPAs: Stringency, Enforcement, and Substitutes, 35 Envtl. Econ. & Mgmt. 242, 243 (1998) ("The stringency of the [CWA's] enforcement by state agencies is not a function merely of budgets, but also of interests group politics."); Cynthia Giles, Why we can't just leave environmental protection to the states, Grist (Apr. 26, 2017), *available at* http://grist.org/opinion/why-we-cant-just-leave-environmental-protection-to-the-states ("The EPA is far less likely [than some state environmental agencies] to be held hostage to companies with local political clout.").
[67] 2018 Economic Analysis at 36 (citing Helland (1998)).
[68] *See* Cynthia Giles, Why we can't just leave environmental protection to the states, Grist (Apr. 26, 2017), *available at* http://grist.org/opinion/why-we-cant-just-leave-environmental-protection-to-the-states.
[69] *Id.*
[70] *Id.*

state regulators, "resulting in fewer and smaller settlements, and less deterrence of future violations."[71] This "backstop" enables companies to report competitors' alleged violations to the federal government when states lack the resources or will to ensure compliance.[72] Without that backstop, there is no guarantee that states will be able to fill the regulatory gap left by the Proposed Replacement Rule.

4. State antipathy

Several states have shown a significant amount of antipathy to the Clean Water Rule and thus cannot be assumed to be willing to fill the regulatory gap once the rule is revised. Multiple states classified as section 402 category 3[73] and as section 404 category 4[74] (i.e., those states deemed most likely to regulate non-jurisdictional waters as state waters) are among the states that have challenged the 2015 Clean Water Rule in court. The fact that those states challenged the 2015 Clean Water Rule should provide strong proof that they are unlikely to pass regulations to fill the gap left once the Clean Water Rule is repealed.

5. Legislation and Rulemakings

The agencies rely in part on state legislation currently in place, which would permit those states to strengthen their regulations over water, in order to predict whether certain states will do so. However, such legislation is not akin to the state having regulations in place that can seamlessly fill the gap left when the agencies remove protections from the regulated waters; nor does it equate to a state's preparation or willingness to do so. If additional rulemakings are required, those can take considerable time, and during the intervening delay, a gap in coverage will cause environmental harms. Moreover, given states' difficulties with cost-benefit analysis, there is no particular reason to believe that every state will adopt efficient regulatory replacements;[75] some states, in attempting to fill the gap left by the proposed repeal, may end up with net costly replacements.[76]

Further, legislation may have little to no bearing on the state's future action. It may have been enacted decades ago by a legislature controlled by a different party, it may have been enacted as a response to judicial decisions (and has been rolled back in subsequent years).[77] As such, this factor is insufficient to support a finding that states will fill the gap.

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[71] *Id.*
[72] *Id.*
[73] Kansas, Louisiana, Nebraska, Nevada, North Carolina, West Virginia, and Wisconsin.
[74] For example, Florida and Indiana; Ohio had also joined litigation against the 2015 rule.
[75] *See generally* Jason Schwartz, *52 Experiments with Regulatory Review: The Political and Economic Inputs into State Rulemakings*, Institute for Policy integrity, Report No. 6 (2010).
[76] By comparison, the agencies assume, without justification, that all "alternative" state regulations will necessarily be net beneficial, *see* 2018 Economic Analysis at 28.
[77] *See* Ariel Wittenberg, "Critics slam WOTUS economics: 'In theory, pigs could fly,'" E&E News (Jan. 21, 2019), *available at* https://www.eenews.net/stories/1060117957.

6. Inconsistencies

The agencies do not treat the three variables consistently. For example, the agencies ignore the presence of legal limitations on regulating aquatic resources for two states—North Carolina and Wisconsin—and conclude that those states are likely to likely to regulate non-jurisdictional waters as state waters.[78] The agencies explain this disparate treatment by noting that despite broad limitations in these states, "in practice . . . [they] still regulate waters beyond the scope of 'waters of the United States'. . ."[79] But if that level of variability exists, then that throws the agencies' entire approach of using the three variables to make assumptions about state responses into doubt.

Similarly, the agencies also note additional uncertainties created by the inconsistency of state treatment of laws requiring "extra steps" or findings of benefits in order to impose state regulations beyond federal requirements;[80] but the agencies do not attempt to account for this state-by-state variation in their analysis.

C. Federalism Does Not Justify the Agencies' Approach

The agencies relied on federalism literature to claim that net benefits might increase if states fill the regulatory gap created by the Proposed Replacement Rule.[81] According to the agencies, the "federalism literature illustrates that states may actually be in a better position than the federal government to regulate local environmental public goods (*e.g.*, water quality)."[82] But, as explained above, there are numerous factors that undermine any assumption that states will even take steps to fill the regulatory gap.

In any event, the literature review that the agencies relied on, conducted by Per G. Fredriksson, does not support the argument.[83] As the agencies conceded, potential benefits from decentralization are likely only if the following factors are present: "no transboundary pollution, many jurisdictions, perfectly mobile capital and immobile labor, a homogenous population, perfect information, production costs and benefits that are locally internalized, and welfare maximizing local governments."[84] Without those assumptions, the main

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[78] *See* 2018 Economic Analysis at 45 n.1.
[79] EPA & Army Corps of Engineers, Resource and Programmatic Assessment for the Proposed Revised Definition of "Waters of the United States" at 57 (2018). The agencies go on to note: "It is beyond the scope of this Resource and Programmatic Assessment to analyze how states with broad legal limitations (*e.g.*, North Carolina and Wisconsin) may, in fact, regulate beyond the scope of CWA jurisdiction. However, the agencies' research indicates that their broader regulation does occur, either because of specific exceptions in the original requirements or through action of the state legislature." *Id.* at 57 n.73.
[80] *Id.* at 57.
[81] 2018 Economic Analysis at 56-57.
[82] *Id.* at xiii.
[83] Per G. Fredriksson, Environmental Federalism: Lessons Learned from the Literature (Feb. 28, 2018), https://www.regulations.gov/document?D=EPA-HQ-OW-2018-0149-0011
[84] 2018 Economic Analysis at 36 (citing Oates and Schwab (1988), Journal of Public Economics, Volume 35, Issue 3, April 1988, Pages 333-354).

results change. As it is highly unlikely that all those assumptions hold in the real world, any conclusion that decentralization will lead to benefits is unsupported.

Particularly in the case of cross-border externalities, the agencies acknowledge that states are unlikely to take into account benefits that accrue outside their border.[85] Likewise in the literature review, Fredriksson explained that there are many states that may not regulate in cases where pollution crosses state borders. For example, Fredriksson found that "many states do not appear to take non-residents into account" and that states may free-ride on other states in the case of negative pollution spillovers.[86]

The agencies also acknowledge that local political influences that may limit the ability of a local government to expand a state's programs and fill the gap left after the agencies remove protections.[87]

In addition, the Fredriksson review finds that states that are affected by "investment competition" may decrease their protections, even if they prefer stronger protections[88] and that there is already evidence in Wisconsin that states are moving to protect less than the federal floor.[89] In sum, as the agencies note, "the theoretical literature argues that decentralization can yield inefficiently weak regulations."[90]

Despite all of these concessions, the agencies still maintain that some states might counter the impact of those factors by deciding to remove legal restrictions so that they can regulate more than they currently regulate and that the combined impact of all these factors on the benefits "is ambiguous."[91]

But the agencies point to nothing to support the assumption that some states which currently have legal limitations on regulating beyond the federal definition would consider removing those limits. That is complete speculation. On the other hand, the literature supports the finding that states likely will not act to protect trans-boundary benefits and that states have limited resources and are hampered by political influences. Putting all this evidence together demonstrates that there is no support for the assumption that states will fill the gap.

D. The Agencies Have Ignored Costs to the States

Even if the states could be expected to regulate at a level above the Proposed Replacement Rule's requirements—and as detailed *supra*, there is no evidence to support such an assumption—those efforts would come with costs borne by states. The agencies have

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[85] *Id.* at 45.
[86] *Id.* at 14-15.
[87] *Id.* at 45.
[88] *Id.*
[89] *Id.* at 15.
[90] 2018 Economic Analysis at 36.
[91] *Id.* at 46.

ignored those costs in the calculation of the economic impact of the Proposed Replacement Rule and thus have arbitrarily ignored an important factor of the proposal.[92]

For example, the agencies have ignored the costs that will arise from state rulemaking processes. Even if states have statutes enabling them to maintain the baseline level of coverage, they may not have *rules* in place, and thus will incur the costs of state regulators formulating new rules.[93] States without rules in place would need to analyze the costs and benefits to formulate their alternative rules.[94] Forcing states to go through the necessary legislative and regulatory processes also involves costs in the forgone benefits during the period of delay, which the agencies cannot ignore.[95]

Beyond costs associated with rulemaking processes, the agencies give short shrift to issues regarding state enforcement. The agencies admit that the administrative costs of states running their own programs may be higher than the costs of running a federal program due to economies of scale and resource constraints.[96] And they concede that "state enforcement capability would also possibly be important in determining state responses." But the agencies ignore the duty to assess and quantify these costs, claiming that because "no measure of enforcement capability was available for use in this analysis."[97]

But there is a way to assess enforcement capability. There are agencies and regulators in each state with a certain amount of staff as well as a budget, all of which is ascertainable. The agencies have already gathered extensive data on the state-level programs[98] and they looked at state program budgets as part of their federalism review.[99] They need only to look at that information to obtain a better picture of the costs of expanding regulation at the state level to make a more accurate assessment of the costs.

In any event, to the extent the agencies determine this impact is not quantifiable or monetizable—and again, that is likely not true—the agencies have an obligation to, at the very least, incorporate this discussion qualitatively by including it in the tables

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[92] *State Farm*, 463 U.S. at 43.
[93] The agencies brush these costs off, without explaining why they do not incorporate them into their assumption of zero impact in gap-filling situations, stating merely that ". . . states will likely incur some transition costs in the short-run . . ." 2018 Economic Analysis at 56.
[94] *See* Jason A. Schwartz, *52 Experiments with Regulatory Review: The Political and Economic Inputs into State Rulemakings*, Institute for Policy integrity, Report No. 6 (2010) at iii-iv.
[95] *California*, 277 F. Supp. 3d at 1123 ("Defendants' failure to consider the benefits of compliance with the provisions that were postponed, as evidenced by the face of the Postponement Notice, rendered their action arbitrary and capricious and in violation of the APA.").
[96] *See* 2018 Economic Analysis at 36, 56.
[97] *Id.* at 39 n.47. *See also id.* at 42 n.49.
[98] Appendices to the Resource and Programmatic Assessment for the Proposed Revised Definition of "Waters of the United States" U.S. Environmental Protection Agency and Department of the Army Revised (Dec. 18, 2018), https://www.epa.gov/sites/production/files/2018-12/documents/wotus_proposed_step_2_rpa_appendices_for_clearance_12-18-18_508c.pdf.
[99] Fredriksson (2018), at 16.

summarizing the state response analysis; Circular A-4 advises as such,[100] and the EPA Guidelines provide specific guidance on doing so.[101]

Ignoring the costs of the state responses has led to a lopsided economic picture of the costs and benefits of the Proposed Replacement Rule.

IV. The Agencies' Revaluation of the Wetland Benefits in Stage 1 Is Fundamentally Flawed.

The agencies' Stage 1 analysis takes the economic analysis used in the 2015 Clean Water Rule as a starting point, but it makes several adjustments which reduce the 2015 Clean Water Rule's valuation of wetlands benefits from $306.1 million (low estimate) to $59 million.[102] But to get to that low number, the agencies have taken several steps that are unsupportable.

A. The Agencies' New Unit Benefits Transfer Analysis Is Riddled with Errors.

The first step the agencies take is to revise the 2015 unit transfer analysis to arbitrarily cut out evidence and then remove state-level benefits from 30 states. But excluding evidence in this way is unjustified. Moreover, the new unit transfer analysis is riddled with typographical and methodological errors. When those errors are corrected, even under the agencies' arbitrarily crabbed unit transfer analysis it becomes apparent that the agencies have grossly underestimated forgone wetland benefits.

1. The Agencies Arbitrarily Exclude Studies When They Revalue the 2015 Economic Analysis's Unit Transfer Analysis

A rational analysis of the benefits of wetlands should look at all the valuation studies with potentially useful information.[103] If a study contains details or evidence that is less useful, the best way of handling that problem is to weight the study according to its evidentiary value. Excluding studies instead can lead to biased and inaccurate results.[104]

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[100] Circular A-4 at 27 ("... please include a summary table that lists all the unquantified benefits and costs, and use your professional judgment to highlight (e.g., with categories or rank ordering) those that you believe are most important (e.g., by considering factors such as the degree of certainty, expected magnitude, and reversibility of effects).")

[101] *See, e.g.*, EPA's Guidelines for Preparing Economic Analyses at 11-3 ("*All 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.") (emphasis in original).

[102] 2015 Economic Analysis at 53; 2018 Economic Analysis at 76

[103] Howard & Shrader (2019), at 2.

[104] Jason Schwartz & Jeffrey Shrader, Muddying the Waters at 2-3, https://policyintegrity.org/files/publications/Muddying_the_Waters.pdf.

There are a number of studies showing people's valuation of protecting wetlands, which could be used by the agencies to inform a wetlands decision.[105] But rather than follow rational principles and include all the relevant studies, the agencies chose to exclude a significant number of these wetland valuation studies, citing issues that either were not valid reasons for excluding the study or issues that could have been addressed by weighting the studies.[106] These issues are more fully addressed in the report submitted by Dr. Peter Howard and Dr. Jeffrey Shrader.[107] As that analysis shows, excluding studies in this way is a fundamental flaw in the agencies' analysis.

2. No Justification for Assigning Zero Forgone Benefits to 31 States

The agencies claim that the unit values derived from the handful of studies they have not excluded can be applied only to states "in which the study[s] [were] conducted and appropriate surrounding states."[108] Consequently, the agencies' new unit transfer analysis calculates forgone benefits for only 19 states; the agencies concede that their unit transfer analysis "omits values from 30 states,"[109] though in truth it also omits values for Hawaii, the District of Columbia, Puerto Rico, and other territories as well.[110] The fact that the unit transfer analysis excludes these states and so is "more restrictive" seems to be the agencies' principal reason for focusing more on the results of the meta-analysis than on the results of the unit transfer analysis.[111] Yet the seeming restrictiveness of the unit transfer analysis is a problem of the agencies' own creation.

To begin, the agencies have arbitrarily excluded studies and so biased the unit transfer analysis. But even if the agencies were correct to rely on only their limited pool of studies, the agencies fail to explain why they were correct to fail to estimate—and so effectively to ignore entirely—the forgone wetland benefits of 31 states.

Most broadly, the agencies could have used the studies they left in the unit transfer analysis to derive estimates of forgone benefits for all states. Taking an average of all the studies would have been a much more accurate estimate for those states than failing to assign any value, which effectively assigns a $0 value. In particular, because the agencies' meta-analysis regression shows that the regionals variables are not significant,[112] an average of the studies would have been a more appropriate estimate. Though there may be some

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[105] *See* 2015 Economic Analysis, at 44-47.
[106] *See* Howard & Shrader (2019) at 3-6.
[107] *Id.*
[108] 2018 Economic Analysis at 69.
[109] 2018 Economic Analysis at 70.
[110] 2018 Economic Analysis at 59 n. 59.
[111] 2018 Economic Analysis at 76.
[112] 2018 Economic Analysis at 73.

uncertainty about the estimate—as there is uncertainty with all estimates—the value of forgone benefits in those states was certainly not zero.[113]

Additionally, the agencies failed to provide any reasoned explanation for why the unit transfer values could be applied only to "surrounding states," and further failed to provide any description of what criteria make for an "appropriate" surrounding state. Why, for example, is the narrow river border shared by Kentucky and Missouri sufficient to make transferring the value from the Kentucky study to Missouri "appropriate," while apparently the great lake shared by Wisconsin and Indiana or the great Mississippi River shared by Wisconsin and Missouri are insufficient connections to allow a value transfer?[114] Why are strict cartographical boundaries a more appropriate basis for value transfer than other commonalities and factors that may tie states together, and which could have, for example, allowed value transfers from Rhode Island to Maine or from Wisconsin to North Dakota based on regional similarities in population? The agencies provide no explanation. Applying the Wisconsin study to North Dakota, for example, would have revealed forgone benefits of $72,031,982—a significant omission for a so-called "category 2" state, and an omission that the agencies never explain.

As described more below, the complete exclusion of 31 states from the unit transfer analysis is in addition to the arbitrary exclusion of estimates of significant regional benefits. In other words, for example, not only could the Rhode Island study have been used to calculate some non-zero estimate for how the residents of Maine value wetlands in Maine, but the residents of Maine almost certainly also have a non-zero value for the wetlands in Rhode Island, and yet the agencies have arbitrarily counted all those significant values as zero.

3. Typographical and Methodological Errors Reveal that the Agencies Have Grossly Underestimated Forgone Benefits

Table III-4 in the agencies' 2018 Economic Analysis is riddled with errors:

- Ohio's value of forgone benefits is given as "$7,331,34," with the final digit missing.
- The total figure given for the unit transfer analysis ($20,374,834) does not match the total figure given for the unit value analysis in Table III-9 ($26,150,660).

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[113] *See Ctr. for Biological Diversity v NHTSA*, 538 F.3d 1172, 1200 (9th Cir. 2008) ("[W]hile the record shows that there is a range of values, the value of carbon emissions reduction is certainly not zero….[The agency] insisted at argument that it placed no value on carbon emissions reduction rather than zero value. We fail to see the difference.").

[114] Instead, both Indiana and Missouri are given values derived from a Kentucky study. The agencies do not explain why the lower values from Kentucky are more appropriate to transfer to these states than the higher values from Wisconsin. And, of course, other states excluded from the unit transfer study—Arkansas and Louisiana—also share the Mississippi River.

- Perhaps most significantly, Table III-4 lists "MS" as a "surrounding state" for Wisconsin, but presumably the agencies intended to count Minnesota (MN) as a neighboring state of Wisconsin, not Mississippi (MS).[115]
- Not only is the state abbreviation wrong, but Table III-4 lists Mississippi's affected acres of wetlands (0.9) and household population (1,115,768) instead of Minnesota's (which, based on Table III-9, should have been 2,087,227 households and 10.7 impacted acres). Though the agencies never state their formula for calculating forgone benefits, presumably they are multiplying acres * households * annual WTP per household per acre.[116] Applying this formula, the agencies' unit transfer analysis should have calculated forgone benefits in Minnesota of $12,993,531—a figure over $12 million greater than the value listed ($576,286 for Mississippi).

Another strange and unexplained feature of Table III-4 is that Illinois is grouped with the states surrounding Kentucky and assigned a transfer value accordingly. However, Illinois obviously shares a larger land border and a significant lake border with Wisconsin. The agencies never explain why it is more appropriate to group Illinois with Kentucky than with Wisconsin, especially given other regional commonalities Illinois and Wisconsin share. Had the agencies used the Wisconsin study to estimate forgone benefits in Illinois rather than the Kentucky study, the estimate would have been over $140 million greater than what is listed in Table III-4.[117] Even if the agencies had taken the average values from both the Kentucky and Wisconsin studies, the forgone benefits in Illinois would be about $70 million greater than what is reported in Table III-4. Similar cases for at least blended values could also be made for Indiana and Ohio, which also share geographic proximity, regional similarities, and even major water features with Wisconsin as well as Kentucky. Using that approach for Indiana and Ohio as well would have increased the estimates by about another $120 million per year in forgone benefits. These significant and unexplained methodological errors result in gross underestimates of total forgone benefits, enough to flip the net benefit calculation of at least Scenario 0 and would likely also flip the calculation for the other Scenarios where the agencies have made the unreasonable

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[115] Wisconsin and Mississippi are connected by the Mississippi River, and as argued above, such a connection should indeed warrant some unit transfer from the Wisconsin study to Mississippi. However, because the agencies have excluded other states also connected by the Mississippi River, such as Arkansas and Louisiana, presumably the agencies were contemplating the more direct land connection between Wisconsin and Minnesota.

[116] Note, however, that applying this formula, some of the values in Table III-4 are impossible to reproduce. This problem with reproducing values in Table III-4 seems to be related to the mismatched totals between Table III-4 and Table III-9.

[117] That is, $146,054,401 rather than the $4,521,460 listed. Note, however, that 51.9 acres * 4,836,972 households * $0.0109 per household per acre actually equals $2,736,323. This is one of several mathematical inconsistencies in Table III-4 that the agencies never explain. Either its calculations are wrong or its data is wrong or the agencies are using some non-obvious formula.

assumption that states will fill the gap and protect waters harmed by this Proposed Replacement Rule.

B. The Agencies Have Conducted a Flawed Meta-Analysis

The agencies' second step is to conduct a new benefit transfer analysis with numbers derived from a meta-analysis of national forgone wetland benefits. The meta-analysis is based on a 2018 working paper by Klaus Moeltner and co-authors.[118] But both the meta-analysis and the agencies' use of the meta-analysis for a new benefit transfer analysis have serious errors.

The meta-analysis is seriously flawed because it does not include many of the relevant studies and it lacks justification for failing to include those studies.[119] Excluding the studies is particularly problematic because the meta-analysis shows signs of serious econometric flaws, which are likely caused by the small sample size.[120] To correct these errors, the agencies should increase the sample size by including all of the relevant studies and conducting necessary sensitivity analyses, as described in an expert report submitted by Dr. Peter Howard and Dr. Jeffrey Shrader (2019).[121]

The agencies have also made several arbitrary methodological choices that have lowered the value of wetlands benefits. For example, the agencies use an arbitrarily low estimate for baseline acreage in each state. As the working paper finds, people value wetlands more as the size of the wetland being valued increases (i.e., "convexity" in the valuation).[122] And there are many states with a huge amount of wetlands. There are 100 million acres in the coterminous states[123] and close to 175 million acres in Alaska alone.[124] Because of the convexity in valuation and the vast variation in the baseline amount of wetlands, an accurate estimate would look at the actual baseline acreage in each state. But rather than take into account data showing the baseline amount of wetland acreage in each state, the agencies chose to use an unreasonably low amount of baseline acres (10,000), the median value found in the studies.[125] Given the convexity of wetlands valuation this choice likely led to a vast undercounting of wetlands benefits.

Similarly, though the agencies have not disclosed their methodology, it is likely that in applying the meta-analysis they also vastly undercounted benefits associated with local

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[118] https://www.regulations.gov/document?D=EPA-HQ-OW-2018-0149-0031.
[119] *See* Howard & Shrader (2019), at 6-7.
[120] *Id.* at 8.
[121] The expert report was submitted to the docket and is available here: https://policyintegrity.org/documents/Shrader_Howard_Expert_Report_FINAL.pdf.
[122] Moeltner (2018), at 23. *See* Howard & Shrader at 10.
[123] U.S. Fish & Wildlife Service, Report to Congress, Status and Trends of Wetlands in the Conterminous United States 2004 to 2009, https://www.fws.gov/wetlands/documents/Status-and-Trends-of-Wetlands-in-the-Conterminous-United-States-2004-to-2009.pdf.
[124] Alaska Dep't of Fish and Game, Wetlands, https://www.adfg.alaska.gov/index.cfm?adfg=wetlands.main
[125] 2018 Economic Analysis at 73.

and other use values. For example, as the meta-analysis shows, local values are the most significant variable in magnitude and significance.[126] In that context, to do a proper benefit transfer analysis, the agencies need to use state data, showing the number of people that live near wetlands and use wetlands. If, as appears likely, the agencies did not use actual state level data, they would be making a mistake because, as the agencies' own analysis shows, the impact of those values likely changes dramatically from place to place.

The agencies should provide information about how they set the values and seek public comment on those choices before proceeding with this proposal.

C. The Agencies' Decision to Ignore the Regional Benefits of Wetlands Is Arbitrary and Capricious

For both the new unit transfer analysis and the new benefit transfer analysis based on the meta-analysis, the agencies have decided to exclude any regional valuation for wetlands.[127] But regional valuation is a significant source of value for wetlands.[128] The agencies claim that including regional benefits is "inappropriate" because using the USDA's Economic Research Service's wetland region determinations would apply willingness to pay values to wetland changes that are "thousands of miles away."[129]

But that does not mean that calculating regional valuation is impossible. In fact, in the 2018 Economic Analysis itself, the agencies have calculated benefits across distances[130] and have calculated benefits across regions.[131] For example, in the Stage 2 analysis, the agencies calculated forgone benefits for the Lower Missouri watershed, which crosses into three different states: Colorado, Nebraska, and Kansas.[132]

Ignoring the regional values renders the agencies' analysis incomplete[133] and arbitrary and capricious.[134]

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[126] *See* 2018 Economic Analysis at 73.
[127] *Id.* at 71.
[128] Howard & Shrader (2019), at 11.
[129] 2018 Economic Analysis at 62.
[130] *See* Howard & Shrader (2019), at 12.
[131] *See* 2018 Economic Analysis at 173.
[132] *See, e.g., id.* at 173-74.
[133] *Id.* at 11-12.
[134] *State Farm*, 463 U.S. at 43.

V. Bifurcating the Analysis and Providing Primarily Qualitative Estimates for Stage 2 Obscures the True Impact of the Proposed Replacement Rule

A. The Agencies Are Required to Provide Information About the True Impact of the Proposal

The agencies are required to explain the impact of this rule by addressing the forgone benefits of the rule.[135] In order to do that, the agencies must assess the proposed rule against the existing status quo. The baseline for that analysis is a world where the 2015 Clean Water Rule is final and parties are implementing the rule.[136] EPA's Guidelines for Preparing Economic Analyses (the "EPA Guidelines") explain that a baseline should reflect "the world absent the proposed regulation or policy action" and that "all final rules" should be included in the baseline regardless of whether they have taken effect.[137] In this way, the public and agency can have an accurate understanding of the incremental impacts of the proposed rule.

B. The Lack of Quantification in the Stage 2 Analysis Obfuscates the True Impact of the Proposed Replacement Rule

Rather than provide an analysis of the impact of the proposed Replacement Rule, the agencies have divided the analysis into two stages and used data concerns to obfuscate the detrimental aspects of the proposal.

In Stage 1, the agencies describe the costs and benefits of repealing the 2015 Clean Water Rule's protections and returning to the pre-2015 practice.[138] In Stage 2, the agencies analyze the costs and benefits of removing even more protections from wetlands and other waters than under that pre-2015 regime.[139] Stage 1 is a largely quantitative analysis that highlights the cost savings of repealing the 2015 Clean Water Rule. Stage 2 uses a mix of qualitative and quantitative analyses, which also disproportionately highlights the cost savings and fails to quantify many important impacts. According to the agencies, moving

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[135] *State Farm*, 463 U.S. at 43; *Air Alliance Houston v. EPA*, 906 F.3d 1049 (D.C. Cir. 2018) (holding that the agency's failure to address the forgone benefits of the rule was arbitrary and capricious); *cf. Nat'l Ass'n of Home Builders v. EPA*, 682 F.3d 1032, 1039 (D.C. Cir. 2012) (finding that the agency properly calculated the costs of amending a regulation); *Mingo Logan Coal Co. v. EPA*, 829 F.3d 710, 730 (D.C. Cir. 2016) (Kavanaugh, J., dissenting) (considering the costs of a repeal is "common sense and settled law").

[136] Air *Alliance Houston v. Environmental Protection Agency*, 906 F.3d 1049, 1068 (D.C. Cir. 2018). *See also* Policy Integrity, Comments on the Definition of "Waters of the United States"—Addition of Applicability Date to 2015 Clean Water Rule, at 3-4 (submitted Dec. 13, 2017), *available at* https://policyintegrity.org/documents/12.13.17_WOTUS_stay_final.pdf, for more details on why it is proper to factor the 2015 Rule into the baseline. Those comments are hereby incorporated.

[137] EPA's Guidelines for Preparing Economic Analyses at 5-1, 5-14 (2010); *See also id.* at 5-10 ("analysts should develop baseline and policy scenarios that assume full compliance with existing and newly enacted (but not yet implemented) regulations for analysis of regulations") (emphasis in original).

[138] 2018 Economic Analysis at 1.

[139] *Id.* at 1.

through the analyses in Stages 1 and 2 allows the public to weigh the costs and benefits of repeal and replacement of the 2015 Clean Water Rule.[140]

But splitting the forgone benefits into two smaller portions makes it easier for decisionmakers and the public to discount the significance of those benefits. This is all the more true for non-monetized effects. The tendency to ignore non-monetized effects is the result of common but irrational mental heuristics like probability neglect. For example, the phenomenon of probability neglect causes people to reduce small probabilities entirely down to zero, resulting in these probabilities playing no role in the decision-making process.[69] The same is true when unmonetized effects are split into smaller portions: each individual small portion is irrationally treated as being closer to zero, when in fact the aggregate could be quite significant.

Here, the lack of quantification for much of the Stage 2 analysis makes it extremely difficult to add those stages together and truly assess the impact of the proposed rule against the baseline. In addition, providing a primarily qualitative discussion of the forgone benefits at Stage 2, the agencies have been able to claim that the effects of Stage 2 are "modest"[141] and that the costs savings outweigh the estimated forgone benefits for all but Scenario 0.[142]

The agencies' failure to quantify much of the impacts of Stage 2 is unjustified. Executive Order 12,866 advises that a cost-benefit analysis be based "on the best reasonably obtainable scientific, technical, economic, and other information," and effects should be quantified "to the extent feasible."[143] Long-standing guidance on regulatory analysis from the Office of Management and Budget similarly advises that "[s]ound quantitative estimates of benefits and costs, where feasible, are preferable to qualitative descriptions."[144] Because some effects are "too difficult to quantify or monetize given current data and methods," however, agencies must also "carry out a careful evaluation of non-quantified benefits and costs."[145] But agencies should quantify effects wherever possible.[146] And in weighing a possible action, an agency "cannot tip the scales" by trumpeting an action's benefits while ignoring the costs.[147]

The agencies assert that they were unable to determine the jurisdictional scope of either the 2015 Clean Water Rule or the Proposed Replacement Rule with enough precision to

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[140] 84 Fed. Reg. at 4,200.
[141] 2018 Economic Analysis at xvii.
[142] *Id.*; *see also id.* at 205 (explaining that the forgone benefits outweigh the cost savings for Scenario 0).
[143] 58 Fed. Reg. 51,735 at §§ 1(b)(7), 6(a)(3)(C).
[144] Circular A-4 at 26.
[145] *Id.* at 26-27.
[146] Exec. Order No. 12,866, § 1 ("Costs and benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nevertheless essential to consider.").
[147] *Sierra Club v. Sigler*, 695 F.2d 957, 979 (5th Cir. 1983); *see also California v. U.S. Bureau of Land Mgmt.*, 277 F. Supp. 3d 1106, 1123 (N.D. Cal. 2017) (vacating a delay where agency relied "on precisely the same Regulatory Impact Analysis that it had previously relied on" to support its findings regarding the suspended rule's costs, but ignored that analysis's findings regarding the rule's benefits).

directly assess the costs and benefits of adopting the Proposed Replacement Rule.[148] But it appears that the relevant data likely does exist. For example, one of the key definitional changes in the Proposed Replacement Rule removes jurisdictional status for ephemeral streams. Meanwhile, intermittent streams retain their jurisdictional status. While the National Hydrography Dataset may not distinguish between ephemeral and intermittent streams on a national scale, the agencies concede that the National Hydrography Dataset does distinguish between ephemeral and intermittent streams in the arid West where these streams are an important part of the hydrological landscape.[149] Just because there is some uncertainty about the effect of Stage 2, does not justify assigning the effect no value in a cost-benefit analysis.[150] The agencies could use that data to calculate the forgone benefits for those regions and to extrapolate for other regions.

Moreover, as an EPA slide deck obtained through a FOIA request clearly indicates, the agencies were able to use data available in the National Hydrography Dataset and National Wetlands Inventory to estimate both (a) the number and length of ephemeral streams in the United States and (b) the national acreage of wetlands which are intersected by ephemeral streams.[151] This allowed them to estimate the streams and wetlands nationwide which would not be protected under the Proposed Replacement. This slide deck directly contradicts the agencies' claim that available data were insufficient to assess the change in jurisdictional determinations which would flow from redefining waters of the United States.

C. The Stage 2 Case Studies Are Misleading and Present an Ad Hoc Approach That Is Methodologically Inconsistent and Based on Specious Assumptions

The Stage 2 case studies are intended to be an illustrative quantitative supplement to the otherwise largely qualitative national analysis of the costs and benefits of imposing the agencies' Proposed Replacement Rule. In addition to the problem of being unable to evaluate the case studies' results relative to the 2015-Rule Baseline, the case studies are also misleading on their own terms because they fail to adopt a coherent methodology and rely on unjustified assumptions.

In both of the case studies where the agencies monetize forgone benefits, the agencies rely on the 1998 Blomquist and Whitehead study to make those valuations.[152] The agencies justify use of this single study by citing the similarities between the wetlands in the Ohio

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[148] 2018 Economic Analysis at 8-9.
[149] *See id.* at 9, 195.
[150] *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin*., 538 F.3d 1172, 1200 (2008).
[151] Ariel Wittenberg & Kevin Bogardus, "EPA Falsely Claims 'No Data' on Waters in WOTUS Rule," E&E News (Dec. 11, 2018), *available* at https://www.eenews.net/stories/1060109323; Breakdown of Flow Regimes in NHD Streams Nationwide Slideshow at 1, 8, https://www.eenews.net/assets/2018/12/11/document_gw_05.pdf (estimating that 18% of streams and 51% of wetlands nationwide would not be protected under the new proposed definition).
[152] Blomquist and Whitehead, *supra* note 128, at 179.

and Lower Missouri River Basins and those valued in the Blomquist & Whitehead (1998) study.[153] The agencies adopt a method similar to that in Blomquist & Whitehead (1998), according to which all households in the watershed's primary state are assumed to be willing to pay for wetland preservation, while households outside of that state are included in the valuation only if they live in a county within the watershed.[154] There are at least two problems with how the agencies chose to conduct benefit transfer in the case studies. The first relates to the selection of contingent valuation studies in the Lower Missouri River Basin case study. The second relates to how the agencies define the geographic parameters that determine the number of households considered in calculating forgone benefits in the Ohio River and Lower Missouri River Basin case studies.

First, because a significant portion of the area within the Lower Missouri River Basin watersheds studied by the agencies falls within the Rainwater Basin studied in Poor (1999),[155] the agencies should have included that study in the valuation of those wetlands. As a 1989 survey by the Corps indicates, many of the Nebraska counties included in the wetland valuation in the Lower Missouri River Basin case study intersect with Nebraska's Rainwater Basin.[156] While EPA has some latitude in reasonably selecting studies for benefit transfer, one key element that should be considered is the "definition of the environmental good being valued."[157] This alone would suggest the appropriateness of incorporating the Poor (1999) study into the valuation for the Lower Missouri River Basin Case Study, because that study is valuing a segment of the very wetlands the agencies are trying to value. Additionally, the agencies' characterization of the Rainwater Basin wetlands as "unique" as a reason for excluding the Poor (1999) study from the national benefit transfer analyses further suggests the appropriateness of its use within this case study.[158] Therefore, the agencies must further explain why the valuation from Poor (1999) was not used in the Lower Missouri River Basin case study.

Second, the agencies take an inconsistent approach to counting the non-use values of households. Specifically, as shown in Figures IV-12 and IV-13 in the Economic Analysis, residents living a defined "primary state" (i.e., Ohio) have their non-use values of the wetlands counted even if they happen to live relatively far from the watershed; yet for residents of neighboring states (i.e., Indiana), only those living in specific counties deemed to be an "adjacent" part of the watershed have their non-use values counted. Other residents of these neighboring states may actually live relatively close to the watershed and, like the residents of the primary state, may have non-use values for the wetlands that do not depend on immediate proximity. Yet while the agencies counted all the residents of

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[153] 2018 Economic Analysis at 146-47, 173-74.
[154] *Id.* at 147, 174.
[155] See Howard & Shrader (2019) at 3-4, for an explanation of why, contrary to the agencies' claims, Poor is a methodologically sound study.
[156] Compare MICHAEL C. GILBERT, ORDINATION AND MAPPING OF WETLAND COMMUNITIES IN NEBRASKA'S RAINWATER BASIN REGION 2, Figure 1 (1989) and Economic Analysis 174-75 Figures IV-16 and IV-17.
[157] EPA Guidelines at 7-53.
[158] 2018 Economic Analysis at 61; cf. "[a]nalysts should avoid using benefit transfer in cases where the policy or case study are focused on a 'good' with unique attributes." EPA guidelines for economic analysis at 7-53.

the primary state, they exclude the non-use values of households in neighboring states based on arbitrarily drawn county and state lines. The agencies failure to explain their reliance on this inconsistent methodology is arbitrary.

A problematic assumption about state responses also infects the entire Lower Missouri River Basin case study, leading the agencies to erase many of the forgone benefits. This problematic assumption renders the case study a poor example of what will actually occur under the rule.

The agencies claim to include case studies in Stage 2 in order to display a "range of scenarios that illustrate the potential outcomes" of the agencies' proposed rules.[159] To that end, the agencies select the Ohio River Basin, the Lower Missouri River Basin, and the Rio Grande River Basin because they "reflect a range of ecosystems, hydrographic characteristics, and regulatory contexts."[160] However, the Lower Missouri River Basin case study is not representative of the Proposed Replacement Rule's likely effects because the agencies rely on an unfounded assumption to minimize estimated forgone benefits for the area. Specifically, the case study ascribes zero forgone benefits to half of its state response scenarios based on the assumption that there is a 50% chance that Kansas and Nebraska will voluntarily regulate their wetlands in compliance with pre-2015 Corps practice. While this result follows from the assumption that both Kansas and Nebraska are category 3 states within the agencies' state-response typology, facts not captured by the agencies' state-response typology illustrate the implausibility of this assumption. First, both Kansas and Nebraska have sued in separate proceedings to enjoin the 2015 Clean Water Rule.[161] Second, neither Kansas nor Nebraska have assumed the section 404 permitting program.[162] Finally, while Kansas has a state permitting program for dredge and fill activities, this program only covers dredge and fill activities in flood plains; Nebraska has no system of state permitting for dredge and fill activities at all.[163]

Therefore, the assumptions underlying the case study's results are misleading and present a substantial possibility of misleading decisionmakers and the public. As the Fourth Circuit held in *Hughes River Watershed Conservancy*, "[m]isleading economic assumptions" can undermine the agency's objective consideration of the adverse environmental effects associated with a given course of action.[164] The assumption that Kansas and Nebraska are 50% likely to regulate their state waters above the CWA floor is such an assumption, and this highly problematic assumption infects the case study and paints a misleading picture about likely forgone benefits under Stage 2.

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[159] 2018 Economic Analysis at 122.
[160] *Id.*
[161] See North Dakota v. EPA, 127 F. Supp. 3d 1047 (D.N.D. 2015); Georgia v. Pruitt, 326 F. Supp. 3d 1356 (S.D. Ga. 2018).
[162] 2018 Resource and Programmatic Assessment at 106, 127.
[163] *Id.* at 106, 127.
[164] Hughes River Watershed Conservancy v. Glickman, 81 F.3d 437, 446 (4th Cir. 1996).

D. The Agencies' Own Economic Analysis Shows that they Should Not Move Forward with the Proposed Replacement Rule

Though the agencies have not provided a full quantified estimate of the forgone benefits of Stage 2, it is clear from the qualitative discussions that the harms of rolling back the 2015 Clean Water Rule as proposed in Stage 2 are significant. As the agencies acknowledge in the 2018 Economic Analysis, ephemeral streams are a vital part of the hydrological landscape in the arid West.[165] Yet the Proposed Replacement Rule removes ephemeral streams from protection and states in the arid West are expected to bear significant environmental harms due to this. The Proposed Replacement Rule will also limit those states' ability to set total daily maximum load standards for those non-jurisdictional waters.[166] Second, states with large mitigation requirements for section 404 permits are expected to be harmed by removing certain wetlands and streams from the definition of waters of the United States unless they independently regulate those waters.[167] The agencies also note that facilities no longer expected to discharge into jurisdictional waters will be removed from the section 311 Spill Prevention, Control and Countermeasure (SPCC) plan requirements; because of these reduced monitoring requirements, the likelihood of spills from such facilities may increase.[168]

Given that the harms of the rule are so significant, only very strong evidence of net benefits would support any rollback (assuming it was legal in other respects). But that is not evidence that the agencies have. Instead, the agencies' own analysis shows that at least one of the studied scenarios has net costs.[169] Not only does this make it incumbent on the agencies to show that the assumptions supporting a conclusion that the rule is cost-benefit justified are more appropriate than those that do not,[170] the fact that the Proposed Replacement Rule may be cost-benefit justified by such a thin margin suggests that there is too much uncertainty to proceed.

In sum, the agencies lopsided analysis of Stage 2 is not sufficient for an accurate assessment of the rule's costs and benefits.

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[165] 2018 Economic Analysis at 195; *see also* Alisha Steward, et al., *When the river runs dry: human and ecological values of dry riverbeds* (March 2012), Front Ecol. Environ. 2012; 10(4): 202–209, http://www.esa.org/pdfs/Steward.pdf; Comment by Gene Likens (Mar. 13, 2019), https://www.regulations.gov/document?D=EPA-HQ-OW-2018-0149-0801.

[166] 2018 Economic Analysis at 87, 120.

[167] *Id.* at 98.

[168] *Id.* at 107.

[169] *Compare id.* at 222, Table B-1 (listing net benefits of $60.5 million for Stage 1 and Scenario 0 of the Proposed Replacement Rule) with *id.* at 207-08, Tables IV-60, IV-61, IV-62 (showing that Stage 2 at Scenario 0 of the Proposed Replacement Rule is net costly by $63.8 million).

[170] *See* Circular A-4 at 42 ("If benefit or cost estimates depend heavily on certain assumptions, you should make those assumptions explicit and carry out sensitivity analysis using plausible alternative assumptions. If the value of net benefits changes from positive to negative (or vice versa) . . . you should conduct further analysis to determine which of the alternative assumptions is more appropriate.")

VI. The Agencies Do Not Adequately Explain How They Evaluate Avoided Costs in Stage 1 or Why the Alleged Avoided Costs Justify the Proposed Rule

The agencies' cost-benefit justification for the proposed rule hinges on the alleged cost savings under Section 404. Table III-10 shows that in Stage 1-Scenario 1, the high estimate of forgone benefits for Section 402-CAFO & Stormwater Administration and Implementation ($21 million + unquantified benefits) exceeds the high estimate of avoided costs ($20.8 million); the same is true of Scenarios 2 and 3 and, according to Appendix B, of Scenarios 0 and 1a as well. Only by virtue of the large alleged cost savings from wetland and stream mitigation under Section 404 does Stage 1 of the proposed rule appear to be at all cost-benefit justified.

There are at least two problems with this. First, the agencies have failed to explore other alternatives to the proposed rule that might, according to their own calculations, better maximize net public welfare by preserving more of the Section 402 forgone benefits. Failure to consider reasonable alternatives violates the guidelines of Executive Order 12,866 and *Circular A-4* and strongly suggests an arbitrary rulemaking process that had a predetermined outcome in mind.

Second, the agencies do not adequately explain how they have derived their calculations of the alleged Section 404 cost savings on which the proposed rule hinges. In evaluating the avoided costs of the repeal, the agencies explain only a few adjustments to the estimated costs of the 2015 Clean Water Rule (which are now the avoided costs in the repeal scenario).[171] The agencies discuss two upward adjustments that are made to the avoided cost calculation in Stage 1.[172] First, the results of the 2015 Economic Analysis are adjusted for inflation; second, mitigation costs associated with section 404 permits are adjusted to correct an alleged error in the 2015 Economic Analysis.[173] These changes seem to only slightly increase the total cost estimates from a range of $158.4-$306.6 million in costs of the 2015 rule to a range of $164.9-$343.1 million in avoided costs in Scenario 0 of the proposed repeal; for Section 404 wetland mitigation specifically, costs increase slightly from a range of $54.4-$152.3 million under the 2015 rule to a range of $57.4 million to $159.7 million in avoided costs in Scenario 0 of the proposed repeal.[174] However, not only do these slight increases conceal dramatic underlying increases in state-specific per acre

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[171] The agencies also use an article by Sunding and Zilberman.

[172] The agencies' state scenarios also greatly affect their cost estimates.

[173] According to the agencies "[t]he per-acre variable cost term from the Sunding and Zilberman (2002) study was not multiplied by the number of permits, which resulted in a significant decrease in the high-end cost estimate for 404 permitting in the 2015 and 2017 economic analyses." 2018 Economic Analysis at 81.

[174] The 2015 Economic Analysis, 53-54, included two cost range estimates. The agencies now do not specify which range from 2015 they use as a baseline, but it appears that they are relying on the smaller cost estimates. The agencies do not explain why they look only to this estimate and not both ranges calculated in the 2015 Economic Analysis. *Compare* 2018 Economic Analysis at 222, Appendix B Table B-1 and 2015 Economic Analysis at 53-54 Figure 74a.

cost estimates, but given the availability of mitigation bank credits, the costs likely should have decreased since the 2015 estimates.

To begin, despite seeming to only slightly change the estimates, it is difficult to square the new estimates of avoided costs under Stage 1 with the underlying data behind the original 2015 estimates of wetland mitigation costs. In 2015, the agencies estimated a range of $54.4-$152.3 million in total mitigation costs, to mitigate 2309 acres of wetlands,[175] for an average per acre cost of between $23,550 and $65,972. Now, the proposed rule estimates a range of $57.4-$159.7 million in avoided costs under Stage 1-Scenario 0,[176] but only estimates forgone mitigation of half as many acres, 1154,[177] for an average per acre avoided cost of between $49,740 and $138,388. The agencies do not explain the significant per acre cost increase. The cost estimates by individual states have also dramatically increased, often without any explanation, and always without adequate documentation of the underlying data. For example, in 2015, the agencies estimated the mitigation costs in Arkansas would be between $2,105 and $5,262 per acre, based on "district" data from 2011 and inflated to 2014$.[178] Now, however, the agencies have resorted to an "average of neighboring state estimates" to calculate per acre costs in Arkansas between $30,040 and $54,396[179]—an increase of more than ten times, and without any explanation of why the Arkansas district data used in the 2015 rule was abandoned in favor of a regional proxy. Missouri's per acre costs went from $15,787-$26,311 in the 2015 rule, based on district data from 2011, up to the proposed repeal's estimate of as much as $81,000 per acre; the only post-2015 data updates cited for this large increase are "pers[onal] comm[unications]" with a "banker" and a foundation in 2017.[180] Similar stories of large and unexplained increases can be told for nearly every state.

Moreover, for Arkansas, Missouri, and many other states, no estimate for wetland mitigation costs based on credit prices is given. Indeed, the increasing availability of mitigation credits should have decreased costs since they were estimated in 2015, not increased them. The agencies seem to have ignored the documented growth of mitigation banks and their effect on wetland and stream mitigation costs.

While both the 2015 Economic Analysis and the Stage 2 analysis in the 2018 Economic Analysis discuss independent field work done by the agencies to account for developments such as mitigation banks and pay-in-lieu programs which effect section 404 permit mitigation costs,[181] there is no indication that similar efforts were made to adjust costs in

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[175] Supporting Documentation (Analysis of Jurisdictional Determinations for Economic Analysis and Rule) at 13, https://www.regulations.gov/document?D=EPA-HQ-OW-2011-0880-20877.
[176] 2018 Economic Analysis at 222.
[177] *See id.* at 77-78.
[178] Supporting Documentation (Analysis of Jurisdictional Determinations for Economic Analysis and Rule) at 13, 15, 16, https://www.regulations.gov/document?D=EPA-HQ-OW-2011-0880-20877.
[179] Mitigation Cost Estimates by State (Used for Proposed Rule Economic Analysis), https://www.regulations.gov/document?D=EPA-HQ-OW-2018-0149-0057.
[180] *Compare* 205 Supporting Documentation, *supra*, *with* 2018 Mitigation Cost Estimates, *supra*.
[181] 2015 Economic Analysis at 39-40; 2018 Economic Analysis at 144-145.

the Stage 1 analysis.[182] The failure to do so ignores the well-documented effects of the expansion of such programs and the way this expansion is expected to decrease mitigation costs. In a recent article assessing the growth of mitigation banks, two EPA scientists, Palmer Hough and Rachel Harrington, discuss how mitigation banks expanded both in terms of absolute numbers and geographic distribution between 2008 and 2018.[183] In addition to a 120% increase in approved mitigation banks for section 404 credits generally, the study also notes a 260% increase in approved mitigation banks offering stream mitigation credits.[184] Hough and Harrington also measured a 55% increase in the withdrawal of mitigation credits over this time period.[185] The expansion of the mitigation banks and other market-driven approaches to section 404 mitigation requirements are expected to reduce mitigation costs generally;[186] these cost reductions are expected to be especially prominent in the states with few additional protections for wetlands, i.e. those states that the agencies do not expect to regulate wetlands above the floor set by the CWA.[187] Therefore, the likelihood that cost savings are overstated in Stage 1 generally and in state response scenarios 2 and 3 in particular raises the possibility that the repeal of the 2015 Clean Water Rule is not cost-benefit justified.

The agencies must indicate whether these well-documented effects of the expansion of mitigation banks were taken into account in the Stage 1 analysis and, if not, the agencies must take them into account in their estimates of avoided costs. The agencies must more thoroughly document the data for their cost estimates, explain any significant differences between their new estimates and the 2015 cost estimates, and ultimately should select the regulatory alternative that actually maximizes net benefits.

VII. The Agencies Fail to Give Consider Important Unquantified Forgone Benefits

The agencies do not quantify or monetize many of the forgone benefits resulting from implementation of the Proposed Replacement Rule. For instance, the agencies exclude forgone benefits from Hawaii and Washington, D.C. "due to a lack of data."[188] Likewise, Alaska is omitted from Scenario 0 of the sensitivity analyses for the same reason.[189] Meanwhile, the agencies make no mention of the forgone benefits in Puerto Rico or other

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[182] A keyword search for "credit" in the 2018 Economic Analysis turns up no hit until page 95—well into the Stage 2 analysis, and completely bypassing the Stage 1 analysis.
[183] Palmer Hough and Rachel Harrington, *Ten Years of the Compensatory Mitigation Rule: Reflections on Progress and Opportunities*, 49 ENVIRONMENTAL LAW REPORTER 10018, 10022-23 (2018).
[184] *Id.* at 10022-23.
[185] *Id.* at 10024.
[186] INSTITUTE FOR POLICY INTEGRITY, MUDDYING THE WATERS: HOW THE TRUMP ADMINISTRATION IS OBSCURING THE VALUE OF WETLANDS PROTECTION FROM THE CLEAN WATER RULE at 4 (2017).
[187] *Id*. at 9 (2017).
[188] 2018 Economic Analysis at 59, n.59. These were classified as category 2 and 1, respectively. *See id.* at 44. The states
[189] *See generally* 2018 Economic Analysis, Appendix E.

territories, despite analyzing Puerto Rico in Appendix B to the Resource and Programmatic Assessment and showing that Puerto Rico should be classified as a category 2 state.[190]

The agencies also entirely fail to quantify or monetize forgone stream mitigation benefits, "due to a lack of available studies."[191] In fact, due to the NHD dataset's limitations, the agencies assume all streams in the NHD dataset to be not ephemeral, thereby omitting forgone benefits associated with these waters. The agencies concede that "[t]his may have omitted relevant activities or permits from the analysis, which would understate the impacts of the proposed rule."[192]

Even within the category of forgone wetland benefits, not all important effects have been quantified or monetized. Which categories of benefits have been monetized by the studies that the agencies included in their unit transfer analysis and meta-analysis depend on how those studies were designed. To the extent the design of some studies would indicate that their measures of willingness to pay are focused on only certain use or non-use values, the studies may not fully monetize other important use or non-use values.[193] The agencies admit, for example, that their benefit transfer analyses excluded any studies that estimated "the market value of extracted products,"[194] and yet the agencies do not otherwise assess whether the willingness-to-pay studies they choose to focus on adequately capture the full range of use and non-use values of wetlands, such as market values, recreational values, direct and indirect ecosystem service values (such as flood control and biodiversity), and scientific and educational values.[195] The agencies also concede that their analysis of the section 404 permitting program does not account for the reduction of incentives for developers to prevent or limit impacts, resulting in further underestimation of forgone benefits.[196] And as these comments already explained, the agencies have failed to value any regional willingness to pay for wetland benefits.

Altogether, the agencies fail to mention or gloss over several key categories of potentially important but currently unquantified forgone benefits. Executive Order 12,866 instructs agencies to give due consideration to all important unquantified costs and benefits.[197] Circular A-4 likewise cautions agencies against ignoring the potential magnitude of

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[190] Resource and Programmatic Assessment at 150-51.
[191] 2018 Economic Analysis at xv.
[192] *Id.* at 196.
[193] *See* 2018 Economic Analysis at 72 (noting that which specific ecosystem services the studies describe to respondents is an important variable in the studies).
[194] 2018 Economic Analysis at 60.
[195] *See* 2018 Economic Analysis at 50 (indicating that their benefit transfer analysis values "ecosystem services," without mentioning other types of forgone wetland benefits); *see id.* at 64 (suggesting that the agencies' focus was on nonuse values like ecosystem services, and that stated preference studies measuring willingness to pay likewise focus on nonuse values, but not mentioning any valuation of uses).
[196] *Id.* at 197.
[197] 58 Fed. Reg. 51,735 at § 1(a) ("Costs and benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nevertheless essential to consider.").

unquantified benefits, because the most efficient rule may not have the "largest quantified and monetized . . . estimate."[198] Specifically, Circular A-4 instructs agencies to "exercise professional judgment in identifying the importance of non-quantified factors . . . [and] recommend which of [them] are of sufficient importance to justify consideration in the regulatory decision."[199] The mere fact that a benefit cannot currently be quantified says little about its magnitude; in fact, some of the most substantial categories of monetized benefits that appear in current economic analyses were once considered unquantifiable.[200] This guidance is of particular importance given the relative closeness of estimated total national cost savings and forgone benefits in various scenarios.[201]

Ultimately, the agencies never explain why the proposed rule's alleged cost savings justify *all* the forgone benefits, including all the unquantified forgone benefits. Even if the proposed rule seems cost-benefit justified according to the agencies' calculations of quantified costs and benefits, the agencies need to explain why, in their best judgment, after considering all the unquantified forgone benefits as well, the proposed rule is warranted. Given the myriad of errors and omissions in assessing the rules quantified and unquantified costs and benefits, as detailed above throughout these comments, the proposed rule is not cost-benefit justified.

VIII. Conclusion

The agencies should not finalize the Proposed Replacement Rule. If they intend to proceed, they should provide the public with the information about their calculations, which is currently missing, as highlighted in these comments. Then, the agencies provide the public with a chance to comment on that information, before finalizing any repeal or replacement of the 2015 Clean Water Rule.

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[198] Circular A-4 at 2.
[199] *Id.* at 10.
[200] *See* Richard L. Revesz, *Quantifying Regulatory Benefits*, 102 CAL. L. REV. 1423, 1436 (2014) (explaining, for example, how the value of statistical life had "initially evaded quantification.").
[201] The agencies concede that in one of the scenarios, forgone benefits of the Proposed Replacement Rule outweigh cost savings. *See* 2018 Economic Analysis at 205, 207-08 (in Scenario 0, the 95th percentile of WTP for wetlands exceeds the lower bound of estimated cost savings). There are several instances of the agencies' main analysis where the difference between estimated annualized cost savings and forgone benefits is less than $20 million. *See, e.g.*, *id.* at 207-08 ($19.8 million – Scenario 2 using 95th percentile of WTP and lower bound of cost savings; $13.4 million – Scenario 3 using 95th percentile of WTP and lower bound of cost savings). In cases such as these, Circular A-4 requires a thoroughly explained rationale regarding unquantified benefits. *See* Circular A-4 at ("For cases in which the unquantified benefits or costs affect a policy choice, you should provide a clear explanation of the rationale behind the choice. Such an explanation could include *detailed information on the nature, timing, likelihood, location, and distribution of the unquantified benefits and costs*.") (emphasis added).

Respectfully,

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ATTACHMENTS—SUBMITTED TO THE RECORD

INSTITUTE FOR POLICY INTEGRITY, COMMENT LETTER: COMMENTS ON THE PROPOSED DEFINITION OF "WATERS OF THE UNITED STATES"—RECODIFICATION & ON THE UNDERLYING ECONOMIC ANALYSIS, DKT. NO. EPA-HQ-OW-2017-0203, 82 Fed. Reg. 34,899 (proposed July 27, 2017) (September 27, 2017), *available at* https://policyintegrity.org/documents/IPI_WOTUS_comments.pdf.

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Jason Schwartz & Jeffrey Shrader, Muddying the Waters (2017) https://policyintegrity.org/files/publications/Muddying_the_Waters.pdf.

Peter Howard & Jeffrey Shrader, Expert Report: An Evaluation of the Revised Definition of "Waters of the United States" (2019) https://policyintegrity.org/documents/Shrader_Howard_Expert_Report_FINAL.pdf

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