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April 15, 2019

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

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

**RE: Comments on “Revised Definition of ‘Waters of the United States’”
84 FR 4154; Docket ID No. EPA-HQ-OW-2018-0149**

Dear Administrator Wheeler and Assistant Secretary James:

The Alaska Chapter of the American Fisheries Society (AFS) is a professional organization of individuals interested in maintaining high standards for the fisheries profession and ensuring conservation of Alaska’s fisheries. Organized in 1974, the Alaska Chapter currently has over 275 members and provides continuing education, fisheries science development, and communication opportunities through annual meetings and 15+ ad hoc committees. Our members work in the private sector, in academic institutions, and in Tribal, state, and federal agencies.

The Alaska Chapter of AFS opposes the proposed rule because it removes existing regulations and fails to adequately protect functionally-significant wetlands and thousands of miles of headwater streams in Alaska. The Alaska Chapter concurs with the position of our parent organization, the American Fisheries Society, in strongly supporting the 2015 definition of “Waters of the United States” (WOTUS) according to the 2015 Clean Water Rule.¹ The 2015 Rule was supported and based on over 1,200 peer-reviewed scientific publications² and had external peer review by the EPA Science Advisory Board. We are strongly opposed to replacing this science-based definition of WOTUS to one based on plurality opinion in a single court case³ and given a 60-day comment period and only two public hearings.

¹ 2015 CWR; 80 FR 37054, Jun 29, 2015

² U.S. EPA. Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence (Final Report). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-14/475F, 2015.

³ *Rapanos v. United States*, 547 U.S. 715, 2006

We strongly disagree with the interpretation that Waters of the United States should be restricted to only those geographic features “described in ordinary parlance” as streams, oceans, rivers, lakes, and wetlands only if they have a continuous visible surface connection to such bodies of water. The proposed definition ignores the biological, chemical, and physical connectivity of waters, and thus places at risk the bulk of downstream waters which receive pollutants, as well as nutrients, oxygen, minerals, sediments, fish and other aquatic life from the headwater streams and wetlands that feed them. Headwater streams and wetlands are integral components of watersheds that are critical for biodiversity, fisheries, ecosystem functions, natural resource-based economies, and human society and culture.⁴ The proposed redefinition of WOTUS directly contradicts the objective of the Clean Water Act, “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters”.⁵

In Alaska, the risks of eliminating networks of headwaters, tributary streams, and wetlands are real, tangible, and economic, and include public health, recreational and commercial fisheries, and wildlife habitat. In a state where fisheries are a valuable sector of our local economies and key to food security in rural communities, the proposed rule could have severe consequences. Based on the most recent data available, the Alaska Department of Fish and Game estimated that in 2007 sport fishing was responsible for \$1.6 billion in economic output, \$545 million in regional income, and over 15,000 jobs.⁶ The economic impact of the Bristol Bay Commercial Salmon Industry alone included an estimated \$1.5 billion in output, \$500 million in income and about 9,800 jobs in 2010.⁷ For rural Alaskans, subsistence fishing and hunting provide a large share of their food – annually they harvest about 18,000 tons of wild foods, including salmon and moose.⁸

The Alaska Chapter of AFS is aware of vast areas in Alaska where river drainages and wetlands have yet to be fully characterized, and yet could be potentially eliminated from Clean Water Act protection by the proposed redefinition of WOTUS. These river drainages and wetlands are exactly the habitats which support our prolific fish populations, world-class fisheries, and abundant wildlife populations. Anadromous fish (e.g. salmon) often rear in small tributaries, flood channels, intermittent streams, and beaver ponds. Due to the remote location, small size, or ephemeral nature of these systems, most have not been surveyed and are not included in the State of Alaska’s Anadromous Waters Catalog.⁹ With the proposed redefinition of WOTUS, these habitats would have no protections at the federal or state level.

⁴ Colvin, S. A., Sullivan, S. M. P., Shirey, P. D., Colvin, R. W., Winemiller, K. O., Hughes, R. M., ... & Danehy, R. J. (2019). Headwater Streams and Wetlands are Critical for Sustaining Fish, Fisheries, and Ecosystem Services. *Fisheries*. 44(2): 73-91.

⁵ 33 U.S.C.1251, Sec 101(a)

⁶ Alaska Department of Fish and Game, Division of Sport Fish (2008) Economic Impacts and Contributions of Sportfishing in Alaska, Professional Paper No. 08-01, Anchorage.
<http://www.adfg.alaska.gov/FedAidpdfs/PP08-01.pdf>

⁷ Knapp, G., M. Guettabi, and S. Goldsmith (2013) The Economic Importance of the Bristol Bay Salmon Fishery.
http://www.iser.uaa.alaska.edu/people/knapp/personal/2013_04-TheEconomicImportanceOfTheBristolBaySalmonIndustry.pdf

⁸ Maas, L. (2017). Alaska is different: It has OSM. U.S. Fish and Wildlife, Office of Subsistence Management.
<https://www.fws.gov/news/blog/index.cfm/2017/1/13/Alaska-is-Different-It-Has-OSM>

⁹ Johnson, J. and K. Klein. 2009 Catalog of waters important for spawning, rearing, or migration of anadromous fishes – Interior Region, Effective June 1, 2009. Alaska Department of Fish and Game, Special Publication No. 09-02, Anchorage.

We submit specific comments, below, concerning the various classes of waters and wetlands in Alaska that would be subject to and impacted by the revised definitions.

Section III, part D. Tributaries (p. 4173-4179). The proposed definitions would be especially damaging in Alaska as Clean Water Rule protections could be removed from many small headwater stream networks in our vast watersheds which have yet to be fully explored and characterized. The hydrologic, chemical, and biological characteristics of hundreds or thousands of headwater streams may be as yet unknown, but we do know these hydrologic networks are subject to constant change due to geological and atmospheric forces, including human-induced climate change.¹⁰ For example, glacial recession and permafrost thawing alter drainage patterns and stream flows.¹¹ Surface waters may recede or disappear with deeper thawing although these streams still maintain subsurface flow and connections to the larger stream network.¹² Likewise, streams in Alaska change course frequently as a result of sudden geological forces such as landslides and volcanic eruptions. Attempting to impose arbitrary and static definitions of what is considered a tributary in this landscape, far from promoting clarity, will have far-reaching, harmful consequences for our fish and wildlife habitat, water supplies, and natural buffering systems. Defining and excluding so-called “ephemeral” streams as streams without obvious, visible surface flow for several months each year could imperil countless streams in Alaska which are frozen for many months each year, which flow through highly porous substrate (e.g. karst), or are deeply embedded in tundra vegetation. The changing landscapes of Alaska starkly illustrate the risk of unintended consequences in trying to impose arbitrary and simplistic definitions on natural systems which we don’t yet fully understand.

As a further example in Alaska, research conducted over the past 15 years by the Kachemak Bay National Estuarine Research Reserve (KBNERR) has started to reveal how and why these headwaters are extremely productive.

“Headwater streams are the uppermost branches of watersheds, and although their small size may make them appear to be inconsequential, they are actually extremely important as rearing habitats for juvenile salmon in the Kenai Lowlands of south central Alaska. In fact, we have discovered that these headwaters are home to thousands of paper-clip sized juvenile salmon. ... Our research has shown that it is the abundant alder patches, peatlands and groundwater flows in the surrounding landscape that makes these headwater streams such good habitat, able to support abundant salmonid populations. These young salmon spend multiple years in the headwaters before migrating out to sea to become adults, where they are an important part of the ecosystem, and provide key economic and food resources to the

¹⁰ Schoen, E.R., M.S. Wipfli, E.J. Trammell, D.J. Rinella, A.L. Floyd, J. Grunblatt, M.D. McCarthy, B.E. Meyer, J.M. Morton, J.E. Powell, A. Prakash, M.N. Reimer, S.L. Stuefer, H. Toniolo, B.M. Wells and F.D.W. Witmer. (2017) Future of Pacific Salmon in the Face of Environmental Change: Lessons from One of the World's Remaining Productive Salmon Regions, *Fisheries*. 42:10, 538-553. DOI:10.1080/03632415.2017.1374251. <http://dx.doi.org/10.1080/03632415.2017.1374251>

¹¹ Box, J. E., et al. (2019) Key indicators of Arctic climate change: 1971–2017. *Environ. Res. Lett.* 14 045010, <https://doi.org/10.1088/1748-9326/aafc1b>

¹² Prowse, T. D., F. J. Wrona, J. D. Reist, J. J. Gibson, J. E. Hobbie, L. M. J. Lévesque and W. F. Vincent. (2006) Climate change effects on hydroecology of Arctic freshwater ecosystems. *Ambio* 7:347–358.

people of Alaska. Not only are these headwaters vital to the health of salmon populations, they should also be considered integral to the health of downstream waters.”¹³

Section III, part F. Lakes and Ponds (p. 4182-4184). In Alaska, vast areas of the landmass, particularly the tundra areas of Western and Northern Alaska, are covered by lakes and ponds which could potentially be excluded in the proposed rule. Huge productive populations of salmon, freshwater fish, and migratory waterfowl depend upon these aquatic habitats for breeding, overwintering, feeding, and resting, and they in turn have supported human populations “since time immemorial.” Alaska Native and other residents of tundra, riverine, and coastal wetland communities still to this day depend upon the fish and wildlife resources for food and trade in areas where shipping, imported food, and fuel costs are prohibitive. We submit that residents of these communities could educate the federal entities regarding the functional definitions of lakes, ponds, and wetlands in these areas, their connection to larger waterways, and their critical importance to drinking water supplies, community infrastructure, and subsistence resources. Some of the largest and best-known tundra and wetland areas of Alaska include the Yukon Flats (part of which is a National Wildlife Refuge), the delta areas of the Yukon and Kuskokwim Rivers (again, parts of which are in the Yukon Delta National Wildlife Refuge), and the Bristol Bay watershed. Like other ecosystems across Alaska, lakes and ponds within these wetland ecosystems are subject to rapid change and fluctuation due to the dynamic nature of the larger rivers to which they are connected, to natural agents such as beavers, and to climate change. We strenuously object to the exclusion of lakes and ponds across vast ecosystems by the imposition of arbitrary definitions or limits on factors such as size, distance, seasonal duration, or amount of water, without considering their connectivity to larger aquatic systems.

Section III, part G. Wetlands (p. 4184-4190). The questions and issues posed in this section impose arbitrary, static definitions onto features which are, by their very nature, highly variable over time and space. Forcing a standard of “adjacency,” i.e. including only wetlands that are physically adjacent to, or touching, a “primary water” such as a flowing river or stream constitutes a radical change in the definition of WOTUS and the protection of wetlands under the Clean Water Act. By isolating different parts of the watershed or ecosystem according to arbitrary or purely legal definitions, the proposed revision misses the functional importance of various components. Instead, the watershed must be considered in aggregate, and the contribution of small, so-called “ephemeral” features may be large in proportion to their visibility or size. Small or apparently isolated wetland features often contribute more than expected to the chemical, biological, and hydrologic connectivity and function of a watershed. Even low or infrequent connectivity can be important to the ecosystem, for example, by providing protective buffering to downstream waters. Such features receive or hold waters, or go dry, at different times in a dynamic relationship with other parts of the hydrological system. They recycle nutrients, filter out pollutants, store water, and capture carbon, among other functions. In contrast, the stated intent of the proposed rule “to provide regulatory certainty through categorical treatment of adjacent wetlands rather than on the case by case application of Justice Kennedy’s significant nexus test,” demonstrates a fundamental lack of understanding of wetland function and value. Wetlands are arguably the most critical component of aquatic ecosystems and responsible for many if not most of the economic and other benefits that we

¹³ KBNERR Annotated headwater stream research review, 2019; published 11 peer-reviewed papers in scientific journals; see <https://accs.uua.alaska.edu/kbnerr/publications/>

receive from our Nation's waters. That is why the policy of "no net loss of wetlands" has been associated with the Clean Water Act for the past 30 years. The proposed rule fails to uphold standards, policies, and scientific principles integral to the Clean Water Act.

As noted in the section on lakes and ponds, the treatment of wetlands has profound implications for Alaska. Alaska has vast, highly productive wetland areas in our large river drainages, estuarine and river delta areas, coastal areas, glacial outwash plains, and in the Arctic. Not all of these wetland features "touch" or are visibly connected to primary waters, but all of them are in fact interconnected. Many of these are in areas underlain by permafrost, and are frozen most of the year. Climate change and permafrost thawing are causing dramatic changes to these areas. Requirements, as mentioned above, for distance limits, direct surface connection to flowing waters, amounts of water present compared to a "typical year," etc. have little real meaning in these areas. These unscientific changes to the definition of WOTUS could potentially – and unnecessarily -- exclude vast areas of productive wetlands which are in fact integral components of river networks and coastal ecosystems. Wetland losses in Alaska could devastate some of the nation and the world's most valuable fisheries (e.g. Bristol Bay).

Section III, part H. Waters and features that are not Waters of the United States (p. 4190-4195). The exclusion of features such as "water-filled depressions created in upland incidental to mining or construction activity, and pits excavated in upland for the purpose of obtaining fill, sand, or gravel" (p.4190) imperils our waters by ignoring the potential for such features to release toxic materials into watersheds. Overflows during heavy rain or snowmelt, geological forces, and seeping or leaching of material into groundwater are some obvious mechanisms whereby artificial features can release contaminants into other waters.

Toxic releases from manmade features are a high risk in Alaska, where many locations are subject to earthquakes, landslides, permafrost and permafrost thawing, and erratic rain and snowfall patterns due to climate change. With recent tailings dam failures in British Columbia which resulted in toxic releases to transboundary, salmon-bearing rivers, Alaskans are keenly aware of the risks to our fisheries resources. In addition to high-profile projects like the proposed Pebble Mine and Donlin Gold Mine, many other much smaller manmade features also place our productive, clean waters and healthy fisheries at risk and need to remain as Waters of the U.S. in order to properly monitor and manage them.

The dynamic and interconnected nature of water and wetland features of all types must be recognized in order to fulfill the Clean Water Act mandate, "*to restore and maintain the chemical, physical, and biological integrity of the Nation's waters,*" in the rapidly changing environment of Alaska. The following statement from a U.S. Geological Survey presentation illustrates the challenge.

"Arctic environments are in a state of rapid change due to warming temperatures, with ongoing and likely future impacts to water resources and ecosystems. Permafrost thaw, vegetation growth, and increasing frequency of wildfires are impacting the availability of water and the partitioning of water between surface and groundwater reservoirs. Warming and thaw of permafrost are also changing the availability and transport of nutrients and contaminants to downstream ecosystems. These changes have direct implications for

humans, wildlife, and ecosystems because they may impact water availability for drinking, industrial activity, and habitat, and the concentrations of solutes, including nutrients and contaminants within that water.”¹⁴

Alaska’s freshwater situation is unique - uniquely intact and intricately connected – rare circumstances for much of the country. The proposed rule would therefore potentially impact Alaska more than any other state. The proposed redefinition of WOTUS would fail to protect our valuable fisheries resources and other ecosystem goods and services because basic scientific principles, as well as current peer-reviewed science, were ignored. We urge the EPA and Army Corps of Engineers to reaffirm the existing 2015 Clean Water Rule and its definition of WOTUS.

Additionally, we ask that the comment period be extended to allow more rural Alaskans, subsistence users and Alaskan Natives to contribute their knowledge to this important issue and share their understanding of the interconnectedness of the Alaskan landscape and our fisheries resources.

Thank you for the opportunity to comment.

Sincerely,



Joel Markis
Alaska Chapter President
on behalf of the Alaska Chapter of the American Fisheries Society

¹⁴ J. Koch, U.S. Geological Survey, Anchorage, March 28, 2019