



Society for Freshwater Science

October 31, 2014

Dear Sir/Madam:

Re: Docket ID No. EPA-HQ-OW-2011-0880; Definition of “Waters of the United States” Under the Clean Water Act

I am submitting these comments regarding EPA-HW-OW-2011-0880 “Definitions of Waters of the United States”, on behalf of the Society for Freshwater Science (SFS). SFS is a scientific society with more than 1600 members from around the world whose research and professional activities focus on the physical, chemical, and biological structure and function of rivers and streams and other shallow-water ecosystems. SFS promotes and advocates the use of the best available science for decision-making related to freshwater ecosystems and communicates this science as necessary to inform the public, environmental managers, and decision makers.

More than a century of scientific research, much of it produced by members of our Society, has clearly shown that headwater, ephemeral, intermittent, and small perennial streams, as well as lakes, wetlands, and groundwater habitats associated with these waters, are an integral part of the physical, chemical, biological, and ecological quality of entire river networks and their downstream receiving waters.

Although some small streams and wetlands may not have a surface connection to larger water systems throughout the year, hydrologic connectivity does exist and these systems in aggregate directly influence and regulate the chemical, physical, and biological integrity of all of the Nation’s waters. The Clean Water Act (CWA), as it is presently being interpreted, cannot adequately provide the means to restore and maintain the chemical, physical, and biological integrity of all of the Nation’s waters unless it includes headwaters and adjacent waters as “waters of the U.S.” Specifically, our research shows that headwaters:

- affect chemical integrity by their capacity to uptake, retain, transform and transport nutrients and contaminants;
- affect the physical integrity of waterways by controlling rates of runoff, water flow, and sediment delivery;
- affect the biological integrity of waterways by providing food resources, thermal refuges, spawning sites, nursery areas, and essential habitat for unique plants and animals, including numerous threatened and endangered species;

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- are often profoundly altered by human activities, to the detriment of downstream water bodies and the public interest; and
- are likely to be among the first freshwater ecosystems to be affected by climate change.

Based on this science, it would be impossible to adequately restore and maintain the chemical, physical, and biological integrity of the Nation's waters without explicitly including headwater and adjacent waters as part of "waters of the U.S." Further, we note that since inception of the CWA there have been significant improvements to water quality and the health of aquatic ecosystems of the Nation, in part due to the historically broad scope of protection.

With these observations in mind, **SFS supports the proposed effort to more clearly define the jurisdictional Waters of the United States in this rule** and offers the following comments:

We begin by complimenting the United States Environmental Protection Agency ("The Agency") for the thorough and rigorous process used in developing the science to support this proposal. This scientific work included one of the most comprehensive reviews to date, a detailed and extensive report providing the content and implications of that comprehensive review¹, commitment to a rigorous independent review process, and an additional review by the EPA SAB (ongoing). We praise the Agency for the scope, extent, and quality of its science.

We support the following general changes as both scientifically defensible and appropriate distinctions in the rule. First, the recognition that streams, regardless of flow status (ephemeral to perennial), strongly influence downstream physical, chemical, and biological integrity ("integrity"). This is consistent with the science developed by our members as detailed in the USEPA 2013 document showing the importance of headwater streams to the health of downstream waters. With protections extended to all tributaries, including ephemeral, the rule avoids the death by a thousand cuts of downstream waters when headwaters are not adequately protected. To be clear, this extends to tributaries above geomorphic barriers or process domains that may interrupt surface flow at times, but do not interrupt the longitudinal connectivity in time or in subsurface flows. Second, we support recognition of the important contribution of wetlands and waters in floodplains and riparian zones to the integrity of tributary and downstream waters. The science clearly shows the influence of connectivity of adjacent floodplain and riparian zone waters to receiving water quality. Third, we support the recognition that "other waters", including wetlands, should be considered in aggregate regionally. Case-by-case analysis alone is scientifically indefensible, in our opinion, and not supported by science, which indicates that the totality of hydrologic and ecological connectivity among similarly situated waters to each other and to river networks is critical for protecting these landscapes and their receiving waters. A case-by-case analysis would likely not properly value the sum effect of these interactions and by ignoring the landscape context of interacting aquatic ecosystems would result in the death by a thousand cuts.

Along with our support of most components, we would also like to express our concern over the following proposed elements. First, we are very concerned that there is even an option that similarly situated regional waters not be considered in aggregate. We strongly encourage the Agency to explore ecoregional and hydrologic landscape regional approaches for grouping similarly situated waters. Again, landscape wetland mosaics have important ecological connections with streams, lakes, and downstream waters beyond simple one-by-one consideration. It is integral to the functioning in ecologically relevant spatial and temporal scales of the basins within which these mosaics (e.g., Prairie Pothole Region, Carolina Bays) exist, that they be protected. Second, we are concerned about tributaries that have been altered or created. Suburban and urban channels that have been transformed into part of the current stormwater infrastructure ought to be considered tributaries. The fact that

¹ U.S. Environmental Protection Agency (USEPA). 2013. Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence. US Environmental Protection Agency, Washington, D.C. EPA/600/R-11/098B.

they have been altered does not change their importance to water quality. Similarly, agriculturally channelized headwaters and/or created channels (e.g., ditches) that become part of the tributary system, by very presence of the connection, are connected to and therefore influential upon downstream water quality and cannot be ignored or exempted. These waters deserve protection as jurisdictional waters and it should be added, distinguished, or confirmed that such tributary waters are still jurisdictional; this critical issue is unclear to us in the current proposed rule. Third, SFS disagrees with exemptions for agriculture, silviculture, ranching, and/or mining. Cumulatively, these land uses represent the greatest area of human disturbed lands affecting tributaries and water quality and their effects on water quality and ecological condition have been extensively detailed in the scientific literature. Failure to protect waters in such settings undermines and limits the progress that can be made on restoring and protecting our national waters because of the extent and rate of growth of these practices. Prior converted croplands are having significant impacts on water quality, especially in tile-drained regions that are increasing in extent. Without adequate oversight and application of Clean Water Act jurisdiction to such waters, water quality will continue to degrade and lead to more frequent adverse ecological responses like hypoxia in the Gulf of Mexico and the cyanobacterial blooms that affected Lake Erie and the Toledo drinking water supply this summer.

The Agency requested specific comments on many elements of the proposed rule. We provide specific comments to some of those.

Specific Comments:

Adjacent Waters

SFS does not support the application of a set width measure for floodplains. Floodplains vary in width by stream size and landscape, so a set width is not scientifically defensible.

We do not support limiting “adjacent” to only within the floodplain or riparian zone, since there are clearly waters with surface and/or shallow subsurface connections to tributaries or navigable waters that are not in these zones. This is especially true of small tributaries where floodplains and riparian zones may be narrower.

We recommend the Agency consider using the floodplain and/or riparian zone to set minimum distances for consideration and then extending the range of adjacency some variable distance beyond that based on regional models (e.g., statistical) of the average extent of waters with surface and/or shallow subsurface connections. We recommend the Agency consider using flood recurrence intervals and regional riparian zone models to define this minimum width and then develop the regional models of maximum distances for use in identifying the appropriate width for adjacency. We do not believe, however, that this will remove all need for assessing the adjacency of some waters on a case-by-case basis.

SFS supports the removal of the parenthetical “other than waters that are themselves wetlands”. The spatial position of waters within the adjacent spatial zone is immaterial, technically, to their importance to the integrity of receiving and downstream waters – their presence in such zones and/or relative to surficial or sub-surficial connectivity seems to be the only determining factor.

“Other Waters”

SFS supports expanding the list of jurisdictional waters that can be specifically defined in the rule as much as possible, including as many similarly situated regional water bodies as possible, given that there is sufficient science to identify and define many of these aggregate “other” water groupings as jurisdictional waters. Furthermore, a case-by-case process would be slow and resource intensive. We do not support, however, eliminating the case-by-case process for the determination of jurisdiction for whatever remaining waters exist, since the science is continually developing.

SFS believes the watershed scale, since it is highly variable, is inappropriately constrained for identifying the spatial dimensions of “in the region” and encourages the Agency to consider expanding this to the Hydrologic Unit Code (HUC) 6 or HUC 8 scale. Watersheds vary in size and the effect of “other waters” that are similarly situated within a larger basin likely often represents a water quality importance that may not be observed within a small watershed, therefore a larger scale is necessary.

SFS would support the Agency developing a scientifically defensible set of indicators for defining connectivity of “other waters” using a mixture of evidence that includes wetland/water-body size, distance, hydrologic connection (using large scale models), geochemistry, and biology (including movement of individuals as well as genes/propagules).

SFS would support the Agency pursuing determination by rule that “other waters” are similarly situated in areas of the country. We believe it is scientifically possible and defensible to do so, and that there is substantial evidence that a priori determinations can be made for regions such as the Prairie Pothole and Carolina Bay regions, and that attempts should be made to identify as many of these regions as possible as jurisdictional a priori. However, as stated above, we believe the Agency should still include provisions for case-by-case or similarly situated significant nexus tests in other regions not included in the final rule and not de facto conclude that “other waters” in any region not identified by the final rule do not have a significant connection, because the science is continuing to evolve and improve.

SFS supports the Agency proposal that demonstrations of connectivity for a subset of similarly situated waters should justify extension to the entire population of similarly situated waters. This is defensible on a statistical basis and an ecological basis, and would greatly reduce the resources and time required to make such a demonstration.

SFS supports the use of ecoregions for defining similarly situated waters, as this is a defensible and proven ecological framework for classifying waters and is consistent with the factors used in the proposed rule to define such regions as scientifically defensible.

For similar reasons, SFS supports the use of hydrologic landscapes and encourages their use as a scientifically defensible complement to ecoregions.

SFS supports the Agency developing a process in rule to make future determinations as scientifically defensible and more practical than additional rulemaking and would be willing to support the technical needs to develop such a process. Again, SFS believes that case-specific determinations need to be retained for remaining waters because the science is continually improving.

SFS believes that determining no “other waters” to be similarly situated as simply indefensible based on the Agency’s own scientific report (USEPA 2013) and the vast weight of scientific evidence. In our opinion, it is far more likely that the Agency will find that similarly situated “other waters” exist and contribute as an aggregate to downstream water quality as the rule, rather than the exception.

Lastly, under the “other waters” theme, SFS requests that the Agency clarify the burden for demonstrating the connectivity of “other waters”. Must it be proven that “other waters” either alone or in aggregate have a significant connection to a (a)(1) to (a)(3) water or to a(1) to (a)(6) water? The language suggests the former, but the science would suggest the latter. By an associative principal, it would seem only defensible scientifically, that contribution to the quality of a water deemed jurisdictional by rule under (a)(4) to (a)(6) would mean contribution to the water quality of waters defined as (a)(1) to (a)(3). If tributaries, for example, are known to clearly contribute to the water quality of downstream navigable waters, then anything that affects their quality should do so as well, simply by definition, especially since tributaries are, by definition, similarly situated. This appears

unclear in the rule content, although it may be clear in the proposed language. This conflict should be resolved, in our scientific opinion, by changing this language to include that (a)(7) waters can demonstrate a nexus with the full list of (a)(1) to (a)(6) waters to be considered jurisdictional.

Excluded Waters

SFS takes issue with the first group of excluded waters (ditches excavated wholly in uplands but connected to downstream waters). Constructing such ditches and connecting them to streams immediately makes them part of the tributary network and, therefore, able to carry and deliver contaminants/pollutants and to support aquatic life. Ditches that are disconnected from the tributary system are one matter, but those connected to the tributary system become tributaries and should have jurisdiction extended to them. It is, otherwise, unprotective and not scientifically defensible to exclude them. Moreover, in many regions, having to define where a headwater channel, channelized natural channel, and constructed ditch begin and end is logistically infeasible and ecologically meaningless, in our opinion.

We thank the Agency for the opportunity to submit these comments.

Respectfully,

A handwritten signature in black ink that reads "David Strayer". The signature is written in a cursive, flowing style.

David Strayer, Ph.D.
President, Society for Freshwater Science