United States Department of the Interior

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IN REPLY REFER TO:

October 26, 2016

Becky Keogh, Director
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118

Dear Director Keogh:

The U.S. Fish and Wildlife Service (Service) appreciates the opportunity to provide the Arkansas Department of Environmental Quality (ADEQ) with comments on the 2018 Assessment Methodology (Phase I). Presented below are Service recommendations as ADEQ moves forward with the process. Our comments are submitted in accordance with the Endangered Species Act (87 Stat. 884, as amended 16 U.S.C. 1531 et seq.).

Excessive sediment of anthropogenic origin is a major stressor of aquatic ecosystems in the United States. Excessive sediment and siltation were identified as leading causes of water quality impairment of the nation's rivers and streams according to the Environmental Protection Agency National Water Quality Inventory-2000 Report (USEPA 2002) with 31% of all river and stream miles listed as impaired due to sedimentation. The protection of aquatic life from excess sedimentation originates from the goals and objectives of the Clean Water Act, particularly the objective "to restore and maintain the chemical, physical, and biological integrity of the nation's waters." Protection of aquatic life is reinforced in Clean Water Act §101(a)(2) which sets forth the national goal that "…wherever attainable, an interim goal of water quality which provides for protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved." Protection of aquatic life from the adverse effects of excess sedimentation and siltation is provided by the Arkansas Pollution Control and Ecology Commission (APC&EC) Regulation 2 narrative standard for solids, floating material, and deposits.

Excessive sediment alters aquatic habitats, suffocates fish eggs and bottom-dwelling organisms, interferes with drinking water treatment processes, and impairs the recreational uses of rivers and streams. Clean stream bottom substrates are essential for the health of many fish and aquatic insect communities. Habitat degradation due to sedimentation occurs when key habitat components, such as spawning gravels and cobble surfaces are covered by fine sediment, decreasing inter-gravel oxygen transfer and reducing or eliminating the quality and quantity of pool and interstitial habitat for fish, benthic macroinvertebrates, and algae.

Narrative water standards protect water quality when a numeric standard is not available or is insufficient. These narrative criteria are used to evaluate support of applicable uses of all waters

of the state. Deposits are addressed only in APC&EC Regulation 2.408 narrative standard for Solids, Floating Material, and Deposits which states "Receiving waters shall have no distinctly visible solids, scum or foam of a persistent nature, nor shall there be any formation of slime, bottom deposits or sludge banks." ADEQ's 2016 Assessment Methodology § 4.3.1 describes evaluation of narrative criteria using "screening levels, if they are available, as well as other information, including water quality studies, existence of fish kills or contaminant spills, and photographic evidence." The Assessment Methodology further outlines assessment of waters as non-support if a violation of any narrative water quality standard is verified by ADEQ or if any numeric standard of narrative criterion is violated. The Service recommends establishment of numeric standards of narrative criterion for bottom deposits or embedded sediments.

The 2018 Assessment Methodology should establish the procedures required to implement and interpret the existing narrative bottom deposits standard to identify conditions of excessive sedimentation and siltation in streams in amounts that adversely affect aquatic life. These procedures will allow the objective determination of compliance with the bottom deposits narrative standard, supporting implementation of the narrative in APC&EC Regulation 2.

The Service recommends ADEQ review of the Arizona Department of Environmental Quality 2015 Implementation Procedures for the Narrative Bottom Deposits Standard (ADEQ 2015; https://legacy.azdeq.gov/environ/water/standards/download/draft_bottom.pdf) as a guide to develop similar Assessment Methodology for embedded sediments in Arkansas. With a comparable narrative standard, Arizona adopted the Implementation Procedures in 2015 and implemented the bottom deposits standard procedures for inclusion of waterbodies in the 2016 assessment (i.e., included exceedances in 305(b) report) and determined whether the designated use was attaining (no exceedance) or inconclusive (one or more exceedances).

The Arizona implementation procedures for bottom deposits are briefly summarized here. The percentage of fine sediment in riffle habitats is determined by a modified Wolman pebble count (100-particle count with median particle size measured). Pebble counts are conducted in the same riffle habitats as bioassessments. When the percentage of fine sediments in riffle habitats exceeds 20 to 35 percent, aquatic life is adversely affected (Bjornn et al. 1977, Relyea et al. 2000).

For the §305(b) assessment, if the average percent fines in riffle habitats is less than 20 percent, then the stream is attaining the narrative bottom deposits standard. If the average percent fines in riffle habitats is 20 to 35 percent fines, then the attainment is inconclusive and a bioassessment will be needed to confirm biological impairment. If the average percent fines in riffle habitats is equal to or greater than 35 percent, then the stream is not attaining the narrative bottom deposits standard (no bioassessment required).

Correspondingly, a violation of the narrative bottom deposits standard as indicated by a determination that the percentage of fines in riffle habitats is equal to or greater than 35 percent is grounds for 303(d) listing. If the percentage of fines in riffle habitats is between 20 and 35 percent and a bioassessment index score indicates an impaired biological community, a violation of the narrative bottom deposits standard has occurred and is grounds for listing the waterbody as impaired under §303(d).

The implementation procedure discussed above primarily targets fine sediments. The Service recommends ADEQ also include a bottom sediment standard in the 2018 Assessment Methodology to address coarser sediments (i.e., small gravel to small cobble). Many streams in Arkansas are experiencing increasing aggradation of pool and run habitats with coarser gravels and cobbles. These coarser sediments embed in boulder habitat that provides important environment for fish, mussels, and Ozark Hellbender. The aggradation of these aquatic habitats by coarser sediments also leads to multiple effects including, but not limited to, shallowing of streams and reduced habitat heterogeneity. Developing bottom sediment assessment methodology based solely on composition of fine sediments would, in some Arkansas streams, fail to adequately protect the entire aquatic fauna community. This would fail to achieve the standards set forth by APC&EC Regulation 2, "to enhance the quality, value, and beneficial uses of the water resources of the state of Arkansas, to aid in the prevention, control and abatement of water pollution, to provide for the protection and propagation of fish and wildlife and to provide for recreation in and on the water."

The Service encourages water quality protective measures and scientifically based criteria consistent with Regulation 2. Adoption of this implementation procedures in the 2018 Assessment Methodology will aid in the goal to prevent excessive sedimentation and siltation that adversely affects aquatic life. Inclusion of implementation procedures for the bottom deposits narrative in the 2018 Assessment Methodology will aid ADEQ in the goal to prevent excessive sedimentation and siltation that adversely affects aquatic life.

The Service welcomes the opportunity to participate in the 2018 Assessment Methodology stakeholder working group (Phase II). If you have any questions about our comments, you may contact Melissa Lombardi of my staff at (501) 513-4488 or melissa_lombardi@fws.gov. Thank you for the opportunity to comment.

Sincerely,

Melvin L. Tobin
Field Supervisor

Bjornn, T.C., M.A. Brusven, M.P. Molnau, J.H. Milligan, and R.A. Klamt. 1977. Transport of granitic sediment in streams and its effects on insects and fish.

Relyea, C.D., G.W. Minshall, and R.J. Danehy. 2000. Stream insects as bioindicators of fine sediment. Proceedings of the Water Environment Federation 6: pp.663-686.

USEPA. 2002. National Water Quality Inventory 2000 Report. U.S. Environmental Protection Agency Report #EPA-841-R-02-001. Washington, D.C.

cc:
Arkansas Game and Fish Commission, Little Rock, Arkansas
Environmental Protection Agency, Dallas, Texas