Fish and Wildlife Flow Methodology Workshop
Fish and Wildlife Subgroup
Meeting Summary
March 27, 2013

The fourth meeting of the Fish and Wildlife Flows subgroup was held March 27, 2013 at the Arkansas Game and Fish Commission Witt Stephens Jr. Central Arkansas Nature Center, 602 President Clinton Avenue, Little Rock. The following were in attendance: John Jackson (ATU), Thom Garday (USDA), Doug Leasure (U of A), Dan Magoulick (U of A), Tim Snell (TNC), Mary Davis (SARP), Mark Oliver (AGFC), Jim Petersen (USGS), Jared Schluterman (ATU), Jeff Quinn (AGFC), Shawn Jackson (ANRC), Jason Throneberry (ANHC), Jason Phillips (USFWS), Steve Filipek (AGFC), Ken Brazil (ANRC), Chris Soller (ANRC), Sarah Clem (ADEQ), Mike Armstrong (AGFC), Nicole Rowan (CDM Smith), Jeremy Rigsby (FTN), and Kent Thornton (FNT). The meeting began at 9:00 a.m. and adjourned at 4:15 p.m. The Workshop Agenda is shown in Attachment 1.

The meeting followed the agenda and began with introductions and a discussion regarding the purpose of the meeting. Nicole Rowan provided a brief overview of the major tasks of the Arkansas Water Plan Update and outlined the three objectives of the meeting:

1. Describe the current process for determining fish and wildlife flows and allocating riparian and non-riparian water,
2. Introduce fish and wildlife flow issues to be addressed for the Arkansas Water Plan Update, and
3. Determine a process Arkansas might undertake to improve future estimates of fish and wildlife flows.

Presentations included:

- Non-Riparian Permitting in Fayetteville Shale Play – K. Brazil, Arkansas Natural Resources Commission
- Arkansas State Water Plan Fish and Wildlife Flows: Challenges and Opportunities – M. Armstrong, Arkansas Game and Fish Commission
- The Arkansas Method of Instream Flow Reservation: Is There A Method To This Madness? – S. Filipek, Arkansas Game and Fish Commission
- Environmental Flow Science: Lessons Learned From Selected Environmental Flow Programs – Dr. M. Davis, Southern Instream Flow Network
- Environmental Flow Standards in Michigan – Dr. M. Davis, Southern Instream Flow Network
- Environmental Flows in Arkansas: What, Why, and How – Dr. D. Magoulick, University of Arkansas
- Quantification of Hydrologic Alteration at Gage Sites – J. Petersen, United States Geological Survey
- Ozark Highland Fish Community Response to Hydrological Disturbance and Stream Discharge – J. Schluterman, Arkansas Technological University

The PowerPoint presentations can be reviewed for detail on the material presented. All presentations can be viewed on the Arkansas Water Plan website, http://www.arwaterplan.arkansas.gov/past_meetings.html.

Following these presentations, a facilitated discussion was held to answer the following four questions:

1. Is the Arkansas Method a reasonable foundation for estimating fish and wildlife flows?
2. Does the Arkansas Method need to be modified as a function of scale, geography, ecoregions, etc., and if so, how?
3. Do the three methods used in the current water plan (i.e., Arkansas Method, Modified Tenant Method, and Pre-Allocation Method) need to be reconciled?
4. How do we get at minimum low stream flow?

The answers to these questions that came out of the discussion are discussed below.

Question One:
Is the Arkansas Method a reasonable foundation for estimating fish and wildlife flows?

Answer:
The use of the Arkansas Method for calculation of "excess water" for determining supply availability is required by current policy. Therefore, the Arkansas Method will be used to update estimates of "excess water" for the 2014 update of the State Water Plan.

The general opinion of the group was that a new method is needed to determine fish and wildlife flow requirements, one that better addresses relationships between ecology and hydrology. However, the Arkansas Method is a reasonable method to be used in the interim until a new method can be developed. Therefore, the Arkansas Method will be used to determine fish and wildlife flows for the 2014 update of the Arkansas Water Plan.

Advantages of the Arkansas Method:
- Considers seasonality.
- Provides an estimate of magnitude.
- Attempts to replicate the natural stream hydrograph.

Disadvantages of the Arkansas Method:
- Does not consider frequency, duration, or rate of change of flow.
- Does not address ecology/hydrology relationships.
- Does not explicitly protect "Extraordinary Resource Water", "Ecologically Sensitive Waterbody", and "Natural and Scenic Waterway" waterbodies.
- Has not been evaluated for protection of fish and wildlife flows in small and/or ungaged waterbodies.

One suggestion was to modify the existing Arkansas Method so that it is more applicable for Arkansas waterbodies designated as "Extraordinary Resource Water", "Ecologically Sensitive Waterbody", and "Natural and Scenic Waterway", to ensure flows in these waterbodies are

adequately protected. This suggestion could be included in the overall recommendations that the subgroup develops as part the water plan update.

The subgroup will work to outline a process that could be included as a recommendation in the 2014 update of the Arkansas Water Plan. This potential recommendation could include suggestions for how current policy may be revised so that an improved methodology can be used in preparing future updates to the Arkansas Water Plan and for implementation of the 2014 State Water Plan. Another option suggested was that permittees could conduct site-specific studies to estimate fish and wildlife flows for a waterbody, which could then be considered by ANRC in evaluating non-riparian withdrawal requests.

Question Two:
Does the Arkansas Method need to be modified as a function of scale, geography, ecoregions, etc., and if so, how?

Recommendation:
The group recommended shifting away from presumptive flow standards (AR Method, Tenant Method) to using empirical, risk-based ecological impact/flow relationships as the foundation for determining fish and wildlife flows in at least the seven flow regimes identified by Magoulick and others. These flow/eco-response relationships are only the scientific underpinning. Actual flows in each of the seven regimes (and within planning basins) would be determined by an as yet to be described stakeholder input process (the risk-based process mention below for Question Three).

The risk based approach would be based on ecological/hydrological response curves that would need to be developed by conducting site-specific studies on multiple streams ranging from reference to highly altered hydrology within each flow regime. The curves will provide estimates for fish and wildlife flows in non-studied streams with the same characteristics as the studied streams and form the basis for interacting with stakeholders on allowable impacts to ecological communities.

The new method also should be developed in waterbodies identified as sensitive (e.g., Extraordinary Resource Water) and of high interest (e.g., Bayou Bartholomew).

Question Three:
Do the three methods used in the current water plans (i.e., Arkansas Method, Modified Tennant Method, Pre-allocation Method) need to be reconciled?

Recommendation:
It was noted that pre-allocation is not a method, but a process that uses the Arkansas Method and Modified Tenant Methods. The recommendation was that these methods would dissolve into one science-based process (determining flow/response relationships for classes of AR rivers) and a social process (stakeholder selection of appropriate flow levels) for both non-riparian permitting and allocation for fish & wildlife sustainability during times of shortage (also yet to be defined). For those systems where an allocation plan has been developed (e.g., White River), the existing allocation plan has precedence over the newly developed method.

Question Four:

How do we determine minimum stream flow?

Recommendation:
There was limited discussion of this question and no recommendation was formulated. However, the establishment of minimum stream flows is mandated by A.C.A. § 15-22-301. Subsequent meetings will need to address this question and formulate the process for integrating the new or improved empirical, risk-based method into the State Water Plan.

Actions:

1. Summarize the workshop recommendations and distribute this to workshop participants
2. Use the current Arkansas Method to update fish and wildlife flows for the State Water Plan revisions
3. Prepare a strawperson process for moving toward an empirical, risk-based approach for estimating fish and wildlife flows and distribute this method to the Subgroup for review, comment, and discussion
4. Formulate an approach for estimating fish and wildlife minimum stream flows and distribute this approach to the Subgroup for review, comment, and discussion