

# Brave New World of Oregon Water Law: Mandated Peak and Ecological Flows

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The State of Oregon in the Summer of 2009 enacted an unprecedented requirement that water developers seeking certain types of state loans and grants submit assurances that particular environmental benefits will be realized from a project in order to qualify for funding. Now it is becoming increasingly clear that meeting the criteria – including requirements governing water flow – will be difficult and expensive, and may discourage many developers from applying for state grant or loan funds in the first place.

HB 3369, as the law is still commonly known,[1] permits the Oregon Water Resources Department (OWRD) to require that peak and ecological flows be met to the satisfaction of the Oregon Department of Fish and Wildlife (ODFW), but nowhere does the bill define such flows. Few people in the region seem to know exactly what peak and ecological flows were intended to cover, how they are to be measured, their duration, purpose, magnitude, or the proper mechanism for implementation and enforcement. All of this was left by the Oregon legislature for others to work out. Given this interpretive void, individuals and interest groups around the state have been tempted to fill it in with meanings that most conforms to their interests. In response to these concerns, the Oregon Water Resources Department convened an Ecological Flow Technical Advisory Group, usually referred to as EFTAG, made up of scientists that study instream ecological flows. Their purpose was to come up with concepts and parameters that would guide Oregon Water Resources Department rule-making. The rules would, among other things, prescribe environmental guidelines for qualifying for the grant and loan programs established by HB 3369.

## The EFTAG White Paper

After a great deal of effort by EFTAG, the collection by OWRD of four separate peer reviews from consultants and groups, and a thorough editing by OWRD[2] to respond to the peer review comments, the EFTAG report finally was released to the public in December 2010. The document, entitled ***White Paper, Peak and Ecological Flows: A Scientific Framework for Implementing Oregon HB 3369***, provides a review of various studies and regulatory frameworks evaluated by EFTAG.[3] It describes concepts that it believes should be included in future rules for protecting ecological flows. The report does not purport to be specific on the issue of regulation; it merely suggests certain guidelines. The EFTAG White Paper provides technical information that can be used by policy makers in crafting rules, guidance, or other strategies to implement HB 3369. At the fairly high altitude level of the EFTAG paper, the group suggested that different guidelines might be applicable for different regions in the State, and that some sort of filter be applied to assess what areas might need the most attention, on a region by region basis.

## What are Peak and Ecological Flows?

The EFTAG paper takes some pains to clarify confusing terminology. The elements of peak and ecological flows are defined this way:

**“Ecological flows,”** which are not currently defined by statute, are instream flows needed to sustain ecosystem functions that native fish and wildlife species require to survive and flourish. The rationale: an adequately protected ecological flow regime includes baseflows as well as a variety of elevated flows that provide habitat maintenance and other ecosystem functions.

**“Peak flows”** may refer to earlier ODFW guidance that discusses peak and elevated streamflows for fish and wildlife needs.

Another instream flow term (often used with large dams) that captures an important consequence of the program is **“bypass flows.”** These are required releases from reservoirs to meet regulatory requirements for fish passage and water quality.[4]

The EFTAG report focuses on the types of flows that would satisfy these definitions:

**“Baseflows”** are needed to provide minimal or optimum habitat for target aquatic species. The reason is to provide adequate habitat, and upstream/downstream and mainstream/tributary connectivity (such as fish passage flows).

**“Biological triggering flows”** that stimulate and help fish life stage behavior, such as migration or spawning. The rationale is to help aquatic organisms to initiate important phases of their life cycle, like migration, spawning, or use of side channels.

**“Channel and habitat maintenance flows”** for creation and maintenance of instream and riparian/floodplain habitat. These flows help to move cobbles and gravels and create riffles and pools, which improves spawning and rearing habitat; to scour the channel; to recruit woody debris; and to help replenish streamside vegetation.

In sum, “ecological flows must include baseflows, peak flows and the range of flows that create or maintain key ecosystem functions and habitat features.”

### **Types of Restrictions That Can Be Expected**

The EFTAG paper looked to California for some ideas on how to come to terms with regulating peak and ecological flows. Here are the categories of restrictions that might be expected from the rulemaking on ecological flows in Oregon:

1) **Baseflows:** In the California approach, (north coast California) estimated mean annual flow was the baseflow bypassed as a condition of the water right. For Oregon, instream water rights, instream flow study results and 50% exceedance flows would be likely methods for setting baseflow for a storage application. This means that as a condition to new storage, the mean (50%) flow may have to be

continuously bypassed in the storage season.[5] Moreover, if the “Oregon Method” (aka Thompson, 1972) is used for setting minimum baseflows, more water might have to be bypassed. There is the suggestion that smaller streams may need to have higher than 50% exceedence bypassed to be protective.

2) **Channel habitat maintenance flows** would likely be set as a percentage of a peak flow that occurs once on average every two years (“two year peak flow”). If the north coast California model is followed, water could be available for appropriation in the amount of 5-10% of the calculated peak flow event. This means that water above the base flow amount plus 5% to 10% of the peak flow would be available for appropriation. However, the percentage may be misleading: it could be lumped into a cumulative formula. In California, during the storage season, the cumulative total of all diversions above a proposed point of consideration is limited to 5% of the 1.5 year peak amount.

Using a cumulative criterion would mean that the storage season would be closed to further appropriation if aggregate existing uses are heavy. The criteria could vary within the proposed percentage range or by basin, or region. If say, 5% is taken by a main channel impoundment, this means that 95% of the water must be passed. This could present a great problem for proposed irrigation reservoirs that would need to build up full reservoirs in the winter. A policy question exists as to what percentage, if any, may be taken of 5, 10 or larger year flows. ODFW guidance protects all flows above peak flows.

3) **Seasonal flow applicability:** The above restrictions would be limited in time. The period could be a subset or the full “storage season.” The storage season is usually from November to April. Depending on local conditions the seasonal flow restriction can vary from the whole season to a couple of months. The extent of this season can be developed for each region of the state based on local hydrology, as well as triggering flow concerns.

### **Identifying Storage Projects and Streams Where the Flow Criteria Would Apply**

Answering the question of what projects and streams would be subject to these criteria requires addressing another, prior question. That is, what procedural, screening criteria will apply to projects (that is, to storage projects, both surface and underground, funded with 3369 funds) and to streams? A lot of thought went into what methods should be employed. In northern California, regionally protective criteria (RPC) were established as simple guides for various regions. This is a model that Oregon could conceivably follow.[6] There is the perceived need for simple screening criteria to define low impact storage projects. A higher level of analysis for higher impact projects could also be considered. A statewide classification of hydrological regions would help to classify streams, hydrologically and geomorphologically early in the process. This analysis would guide which evaluation methods are appropriate

### **How the Screening Process Might Work**

The complexity of methods used to evaluate ecological flow protection for a proposed storage project could be related to a number of factors. Among them, the following appear most relevant: the size or

impact of the project; the biological sensitivity of the stream to additional water withdrawals; previous and cumulative impacts of other projects; the effects of construction of new dams on salmonids that are already limited by existing migration barriers.

If Oregon used a tiered approach, it might look like this:[7]

**Tier 1** – Here would be considered small projects on a waterways that are not a main channel and have no particular fish issues. Tier 1 would entail a basic scoping analysis using season of use and predetermined Regionally Protective Criteria (like California’s RPC) for particular regions, which would specify:

- Existing baseflow criteria
- Channel habitat maintenance, based on percentage of (likely 2 year) peak flow.

If the project fits the RPCs, the application would be approved.

**Tier 2** – If the project does not fit all the RPCs, yet the applicant still desires to pursue it, one would be advanced to Tier 2. Here, OWRD would likely use the existing Oregon criteria for baseflow and possibly modeling[8] or other methods to condition water rights to protect channel habitat maintenance flows.

Conditions could include:

- Time periods of non-use,
- Planned releases, and
- Trigger flows and shut offs (see ODFW guidance)

In addition to projects that exceed RPC criteria, this tier could be used where there are existing or proposed main channel dams or structures. In general this tier would include all projects in between small and high impact. This category is likely to be the most open-ended and subject to considerable discretion in the application of the appropriate methods of analysis. It would involve more detailed assessment than Tier 1, but how detailed is a key question.

**Tier 3** – This tier would likely entail in depth studies for major storage projects on high value streams that have a target species of concern (perhaps a State or Federal listed aquatic species under the Endangered Species Act). This level of analysis may include:

- New baseflow studies using habitat suitability methods and field assessment
- Modeling of high flow conditions that assess the effects of channel and riparian maintenance
- Behavioral studies of target fish species in relation to biological triggering flows.

This tier clearly is not where one would chose his or her project to be, if it can be helped. According to the EFTAG Report, this levels requires “orders of magnitude more effort and cost” than Tier 2. “The scope of most in-depth studies for large scale storage projects will probably be similar to the level of effort that is seen for hydropower licensing or relicensing evaluations.” Project proponents wishing to

use more water than otherwise available in Tier 1 or Tier 2 would therefore have to carry out far more complex studies under the Tier 3 approach to justify increased diversions.

#### Summary of the EFTAG Suggested Procedure

Overall, the mandated flow levels would result from a process, which if adopted consistent with the EFTAG recommendations, would accomplish these broad objectives:

- Places streams/rivers in Oregon into a small subset (5-8) of stream types based on hydrology/geomorphology;
- Establishes regionally protective criteria (RPCs) for those stream types, including the timing of withdrawal limits for protecting ecological flows;
- Identifies a small number (1-3) accepted methods for doing more detailed assessment of peak/ecological flows if an applicant wishes to go beyond the RPC/Tier 1 process and use a process identified in Tier 2 or Tier 3.[9]

#### Conclusion

There is much work to be done if the ideas outlined in the EFTAG report are to be taken up. The staff work needed to develop RPC's alone will stretch an already financially strapped agency. And, when all the work is done, the question arises whether there will be takers for the funds under HB 3369: if the costs to individuals and entities in undertaking storage projects is too prohibitive, economic realities will make applicants turn elsewhere for funds. It may not be worthwhile for someone needing more storage water to do biological and hydrological modeling for a project that will be expensive even without it. Is the fear well-founded that the well-intentioned mission protecting peak and ecological flows comes at a cost of killing storage projects that may otherwise be needed in Oregon? Only time will tell whether or not such fears are justified.

For more information on Oregon water law, please contact Douglas MacDougal or any other member of Marten Law's Water Resources practice group.

#### Footnotes

[1] HB 3369 has been codified principally in ORS Chapter 541 in sections 600 and 700, et seq.

[2] The author wishes to acknowledge the magnanimous assistance of Barry F. Norris, OWRD State Engineer in guiding the author through the complexities of this material. He was the editor of the EFTAG paper, having patiently and skillfully culled through all of the peer review comments for comments and revisions to the final product.

[3] The complete EFTAG paper with all appendices is about 100 pages long. It can be found in full at [http://www1.wrd.state.or.us/pdfs/EFTAG\\_Final.pdf](http://www1.wrd.state.or.us/pdfs/EFTAG_Final.pdf).

[4] There is an abundance of other flow definitions in use today (e.g., instream flows, environmental flows, triggering flows, peak flows etc.) each differing more or less in origin, purpose, and usage. But it may be easier just to think of "base" and "elevated" flows when considering this subject.

[5] This would be regarded as one option. If the stream has existing instream flow rights, this may not be necessary to the extent the base flows are already taken care of.

[6] Setting up RPCs would entail analysis of the base flows, percentage of peak flows and applicable storage season for basins and sub-basins throughout the State.

[7] These are merely suggested EFTAG scenarios, which may or may be adopted by policymakers.

[8] Whether and what type of modeling, if any, would be included among the many policy choices yet to be made.

[9] There is an implicit question of how the approval process would work. Would the decision be made:  
1. by OWRD alone; 2. by OWRD after peer review; or by ODFW. Or would it be some combination of these alternatives.

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