

STATE WATER RESOURCES
CONTROL BOARD

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DIV. OF WATER RIGHTS
SACRAMENTO

April 19, 2008

State Water Resources Control Board
Division of Water Rights
1001 I Street, 14th Floor,
Sacramento, CA 95814

Subject: Comments and concerns regarding Assembly Bill 2121 instream flow policy

Dear Division of Water Rights,

I submit this letter with comments regarding the Division of Water Right (DWR) draft entitled, "Policy for maintaining instream flows in northern California coastal streams." These comments and suggestions are meant to be constructive and not criticisms directed at the authors of the document. The substantial effort put into drafting this document is obvious and should be commended. I strongly believe that this document is an important step in a multi-agency collaboration to conserve economically and ecologically valuable fisheries and other aquatic natural resources. My sincere interest in participating in this review process stems from a background and formal education in ecology and conservation biology. Although I am an Environmental Scientist working in the DWR, the content of this letter represent my sole personal perspective as a public citizen and not that of DWR. My comments, which are arranged according to the pages of the draft, either relate to potential limitations of the policy to protect stream ecology in the north coast region, or are editorial. Considering the large amount of beneficial peer-review and public comment on the document, I hope that DWR staff will have sufficient time to seriously consider suggestions by reviewers.

1. Page 1, section 1.0 Introduction- DFG 2004 and NMFS 1996 citations are missing in Appendix 3, References.
2. Page 3 and 4, section 2.3.2 Minimum Bypass Flow- I believe that "Point of Diversion", "mean annual unimpaired flow", and "watershed drainage area" (bolded but not defined) should be defined in Appendix 2, Glossary of Terms. Relocate superscript 2 from "watershed drainage area" to POD on page 3.
3. Page 4, section 2.3.2 Minimum Bypass Flow- The minimum flow criteria equations exactly duplicate Appendix 1, so the appendix can be removed. I believe that a brief statement should be included explaining the equations and the basis for coefficient 9.4 and exponent -0.48.
4. Page 5, section 2.3.3 Maximum Cumulative Diversion- Citations and references should be provided for the statements in the third paragraph explaining bankfull flow and the 1.5 year return peak flow because these are important concepts to the policy criteria and should be based on research.
5. Page 6, section 3.1 Fishery Resources Covered by the Policy- The policy's focus is on protecting anadromous salmonids and their respective habitats as dictated by DFG-NOAA Fisheries criteria (i.e., 2002 draft "Guidelines for maintaining instream flows to protect fisheries resources downstream of water diversions in mid-California coastal streams"). Consistent with these criteria, the policy suggests that instream flows sufficient for anadromous salmonids are also adequate for smaller native fishes, however, no support for this idea was provided. It is important to cite supporting information, especially because resident fishes- of which multiple cohorts are simultaneously subject to similar stream flows- have very different life histories than anadromous fishes. Further, IFIM results are not directly transferable to species that were not considered in the analysis (Gordon et al. 2004).
6. Continuing from 1., regarding the lack of description of how instream flows would support species other than anadromous salmonids. It must be emphasized that the Division is charged with protecting **ALL** Public Trust Resources within its jurisdiction and **NOT** solely anadromous salmonid species, the policy may not sufficiently protect other aquatic or semi-aquatic species. Many of these species are state or

federally listed or are state "Species of Special Concern" (Appendix C of the Substitute Environmental Document [SED]). Among these are several non-fish species that have instream habitat requirements that differ from those of fish. For example, the maintenance of gravel bars and shallow, wide stream profiles may be more important for foothill yellow-legged frogs than fish. In many streams, multiple frog species may coexist with or without fish. The policy does not specify flow requirements for these non-fish species, or class II streams that provide important habitat for these species. It should be possible to adapt a framework focusing on anadromous salmonids to also meet the life history requirements of other species. With a more comprehensive approach, it may be that species with only general habitat requirements may require little or no change in the original instream flow rates established for anadromous salmonids, while additional evaluation and adjustment of the original flow rates will be necessary for species with more specific requirements. In some situations, habitat restoration (e.g., replanting of riparian buffer zones) may preclude the need for adjusting flows that may in fact reduce available water for users. Ideally, any instream flow management policy should consider factors other than physical habitat requirements that are hypothesized to influence species populations and overall ecosystem health (Gordon et al. 2004). For example, flow requirements may be optimized for improved water quality or to help prevent invasion or expansion of exotic species such as bullfrogs and predatory fish.

7. Page 18 section 4.2 Stream Classification System- The introductory statement appears to be subjective and possibly contentious. A clear and logical explanation that protection of fish is more important than other species, or that fish are more highly dependent on flow protection, should be provided. Otherwise, this statement should be removed. I can understand the economic, ecological, and conservation value in instating strong protection for fish. However, the same ecological and conservation values apply to many other species in the policy area (e.g., species' roles in trophic dynamics, and species recognition for conservation). Perhaps the statement is meant to confer that fish are more highly dependent; if so, further explanation regarding the biology of species is required to support such a statement.

Despite the introductory statement indicating different levels of protection for classes of streams, the policy does not specify the different flow requirements for each. Flow requirements should depend on the species present, respective biological needs of the species, and other measures of ecosystem health. If the variable dependence of species on streams is the basis for not establishing flow requirements for these streams, at least a short description of the general process that will be used to determine flow requirements on class II and III streams would be helpful.

8. Page 19 section 4.2.2 Determination of Stream Class by Stream Survey- The scientific basis for the methodology of stream surveys should be provided. Regarding species surveys, although implicit, I believe that applicants should have to demonstrate that sampling occurred during periods within seasons when detection of species is highest (e.g., when spawning areas are accessible and spawning is at a peak). To assist agencies managing water, land-use, fish, and wildlife resources, I suggest that surveys should also be required to record data that is detailed enough to provide a baseline assessment of species populations and habitat conditions. Future biological assessments can be compared with baseline data to detect changes in habitat and species populations, which will assist adaptive management. This data may additionally be used to assist staff across multiple agencies address concerns involving public trust resources. If survey methods and data are established with the intent of integrating monitoring data with survey data, this may also increase the number of candidate sites for evaluating policy effectiveness.
9. Page 22 and 23 sections 4.4.2 Onstream Dams on Class II Streams and 4.4.3 Onstream Dams on Class III Streams- The content in these sections overlap with 4.4.1, and can be truncated by stating that "solely numbers...of section 4.4.1 apply to onstream dams on class ... streams".
10. Page 25 section 4.4.4 Guidance for Developing Mitigation Plans- Relating to non-native species eradication plan: in situations that non-native species may have escaped from reservoirs and invaded stream reaches, efforts should include detection and eradication species in these locations too.
11. Page 26 section 4.4.4- Relating to gravel and wood augmentation plan: in addition to number 4, number 5 and 6 should also have citations and references.
12. Page 30 section 8.2 Flow Monitoring and Reporting Requirements for Automated computer Controlled Bypass Systems- To assist analysis of monitoring data, DWR should require data to be submitted

electronically on a disk or by e-mail in a software format usable by MS Excel. If necessary, exceptions may be made for permittees who are unable to report data electronically.

13. Page 31 section 10.0 Policy Effectiveness Monitoring and appendix K- I generally agree with information in appendix K regarding monitoring and the adaptive management framework. Researchers and natural resource managers alike, agree on the merits of this approach because management actions and policies can be directly evaluated as research hypotheses. A monitoring program that is specifically designed to address research hypotheses can be used to evaluate the effectiveness of management actions. In addition to monitoring stream hydrology, geomorphology, and habitat, it is very important that demographic parameters of salmonids (i.e., numbers of redds/spawning individuals and juveniles, and survival rates) are also estimated. Without demographic data, natural resource agencies cannot reliably examine the response of salmonid populations to the policy, and consequently may not be able to effectively adapt and manage potential influencing factors. On any given stream, multiple factors may interact to affect stream health. By extension, multiple competing hypotheses or models could be investigated for a better understanding of their relative effects on stream health including salmonid populations. A model selection approach utilizing information criteria such as the Akaike Information Criterion (Burnham and Anderson 2002), would aid in the analysis of the relative importance of different factors.

Considering the limitation of available resources across the agencies, I believe that a partnership and cooperation between agencies will be necessary for effective monitoring. Though the impetus for multi-agency collaboration may be to provide protective instream flows, hypotheses and research should not be limited to factors within DWR jurisdiction, and should include factors (e.g., land-use) regulated by other agencies too. Agencies should also cooperate with academic researchers and private companies working on related projects to increase the number of project locations with detailed information of natural resources (e.g., species surveys). For the purpose of obtaining greater information of, e.g., hydrology, geomorphology, and biology of watersheds, a standardized data recording and reporting process should be developed. From this process of integrating agency information, a "watershed case file" for each watershed could be maintained through time (McCammon et al. 1998). Watershed case files could in turn be used to facilitate future analysis and understanding of factors affecting individual watersheds and the entire policy area.

Because the policy flow requirements are specifically based on anadromous salmonid protection, it may be especially important for monitoring and evaluating effectiveness in protecting several other factors of stream condition. Factors that were not indicated in the draft, but that could be monitored include undercut banks, gravel bars, tree debris, water chemistry, algae growth, estuarine condition, and populations of other biota (including species with known locations based on CDFG's Rarefind software). Collection of data using GIS or other methods could also be used to evaluate terrestrial factors that interact with stream flow (e.g., land-use). Terrestrial factors could adversely affect stream health and may be best addressed with land and not flow management.

14. Page 41 section 12.0 Watershed Approach- I believe the watershed group approach should be encouraged so that users can attain a better understanding of the issues and characteristics relating to whole watersheds and not only a section of stream. This should in turn improve the efficiency of managing flows, and avoid or correct for injury to the native ecology as well as other users.

I appreciate your time and effort in reviewing these comments and suggestions. I hope that they are useful. If there are questions relating to these comments, please feel free to contact me. Thank you.

Sincerely,

Elliott L. Matchett

Elliott L. Matchett
Concerned citizen

References:

- Burnham, K. P. and D. R. Anderson. 2002. *Model Selection and Multimodel Inference: A practical information-theoretic approach* (Second edition). Springer-Verlag New York, USA.
- Gordon, N. D., T. A. McMahon, B. L. Finlayson, C. J. Gippel, and R. J. Nathan. 2004. *Stream Hydrology: An introduction for ecologists* (Second edition). John Wiley and Sons Ltd., West Sussex, England.
- McMammom, B., J. Rector, and K. Gebhardt. 1998. *A framework for analyzing the hydrologic condition of watersheds*. U.S. Department of Agriculture, Forest Service and U.S. Department of the Interior, Bureau of Land Management.