



California Regional Water Quality Control Board

Central Valley Region



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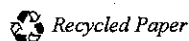
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PROPOSED 303(D) LISTING FOR NORTH FORK FEATHER RIVER

This letter is in response to the SWRCB two-page summary proposing a 303(d) listing for temperature impairment in the North Fork Feather River (NF Feather). Though our staff has had limited involvement with the ongoing FERC re-license process for the NF Feather (and the temperature issues which we know have been a part of that process), we have had extensive experience in recent years working with local watershed management programs throughout the northern part of the Sacramento River watershed area. The activities of those programs have included preparation of watershed assessments, watershed management plans, and the conduct of ambient water quality monitoring (including temperature monitoring). Our comments below are a reflection of our experience in working with these individual watershed programs and the water quality monitoring activities undertaken by our Redding office staff.

1. The summary document cites numerous temperatures in excess of 21C as the basis for listing the NF Feather for temperature impairment. While our listing policy may allow for a listing based on only one line of evidence, it seems in this instance additional evidence should be presented to substantiate impairment. To the best of our knowledge, if there is temperature impairment in NF Feather, the only 'controllable factor' causing this impairment would be the ongoing hydroelectric operations in the river. It has been our experience that hydroelectric operations can alter temperature regimes in rivers and streams, but that alteration can be towards a warmer or a colder temperature regime, depending on site specific conditions. It would seem in this instance that an additional line of evidence to support listing should include one or more of the following:
 - a. that the overall temperature regime of the NF Feather was colder (not exceeding 21C) prior to the construction and operation of the hydro facilities
 - b. that populations of cold water species (i.e. trout) were more robust prior to the hydro operations and that the change appears to be temperature related
 - c. that current populations of cold water species are suppressed and that situation appears to be temperature related (as opposed to changes in habitat quality or some other factor)
 - d. that the 'natural or background' temperature regime in NF Feather (without hydro operations) would not exceed 21C

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It is not clear to us what information exists with regard to a. through d. above, and this should have a major bearing on the decision to place NF Feather on the 303(d) list for temperature impairment.

2. Exceedence of an instantaneous daily maximum as basis for listing seems to grossly oversimplify temperature and cold water species relationships in our rivers and streams. Most rivers and streams in the Sacramento River watershed (above the valley floor) are Beneficial Use designated as Cold Freshwater Habitat (COLD). Annual temperature regimes in these waters vary seasonally and spatially (generally cold in the headwaters and progressively warm towards lower elevations). Some streams and some stream reaches are suitable COLD habitat only seasonally for both resident and anadromous species. Some are suitable COLD habitat only in their upper reaches. Some have 'micro-habitat' where cold-water species can seek refuge during critical times of year even though generally recorded stream temperatures substantially exceed reported tolerance levels of these species. There are also issues of life stage, some waters being temperature suitable for adult survival but not for earlier life stages. Some waters have modified temperature regimes (modified from "natural or background levels") from human activities, which are 'controllable'. Other COLD waters have modified temperature regimes that are due entirely to natural, climatic conditions or are due to human activities that are not 'controllable' or reversible. Our point here is that understanding temperature/cold water species relationships and determining 'impairment' in the real world of modified rivers and streams is a very complex process. Bottom line is that we believe a 303(d) temperature listing is merited only under the following circumstances:
 - a. there is clear evidence that the water quality objective is exceeded or there is documented BU impairment,
 - b. temperature can be identified as the cause of the objective exceedances or the BU impairment,
 - c. the exceedances or impairment is the result of controllable activities.
3. With the advent of continuous recording temperature devices that are technically efficient and inexpensive, we are now seeing a substantial increase in available information to better identify annual temperature regimes. Examples where this kind of information has recently come available include:
 - Upper Sacramento River (above Shasta Lake)
 - Pit River and numerous tributary streams
 - Lower Sacramento River (below Shasta Lake)
 - Upper Feather River (NF and MF above Oroville) and numerous tributary streams
 - Cow Creek watershed
 - Deer Creek watershed

All of these waters are COLD listed. A cursory review of the existing temperature data shows that, using the same criteria proposed for the NF Feather listing, most (not all) of the above waters would be 303(d) listed for temperature impairment. In some instances, a listing may be appropriate. However, for reasons discussed in #2 above, a temperature listing in many of these waters would not be appropriate. Given the reality that 303(d) listing and subsequent TMDL

activity is a principal driving force for so much of our agency work and priorities, it is important that initial listings are well founded in order to make the most efficient use of our limited time and \$.

4. We were surprised to see exceedance of an instantaneous daily maximum used as the basis for determining temperature impairment. Literature references and water quality criteria discuss several different metrics for assessing the implications of temperature to aquatic species. These include
- number of successive days exceeding a specified daily max
 - number of total days exceeding a specified daily max
 - maximum weekly average temperature (MWAT)
 - maximum weekly maximum temperature
 - diurnal temperature variation

It is our understanding that temperature impacts to cold-water species are most commonly judged by use of the MWAT and determination if it exceeds a specified temperature deemed necessary for protection of that life stage of the species.

5. In recognition of the complexity of determining 'temperature impairment' in any individual watercourse or watershed, we suggest that some of our available 303(d)/TMDL funding be used for case studies on selected waters where we now have (or soon will have) an extensive data set on annual temperature regime. Scope of the study could include detailed analysis of that data, together with the watershed conditions that influence that temperature regime, with the desired outcome being a recommendation to the Regional Board as to the validity of temperature listing in that watercourse. We believe this would bring some needed additional science to the listing process and could provide a protocol template for consideration of temperature listings in other waters. We would be interested in working closely with and managing a contract study of this type.

In conclusion, we do not support 303(d) temperature listing for the NF Feather River based on information we have (including information referenced in the two page listing summary). We request that you include this letter with your comments to SWRCB on the current proposed listings. If you have questions or comments, please contact Dennis R. Heiman of my staff at (530) 224-4851, or at the letterhead address noted above.

James C. Pedri, P.E.
Assistant Executive Officer

DRH: sae

cc: Sharon Stohrer, SWRCB, Div. Of Water Rights, Sacramento