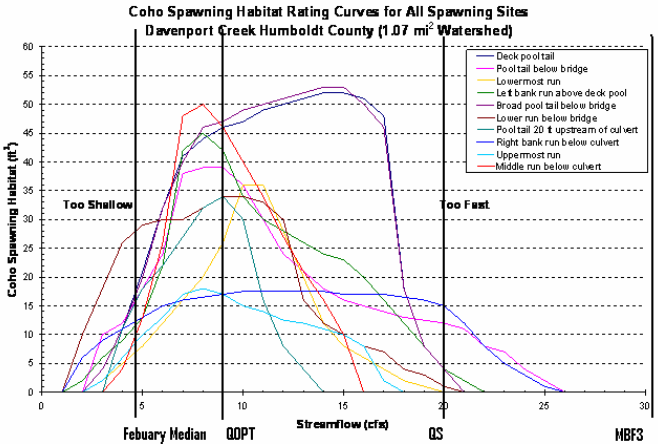
11/12/09
Memorandum to Karen Niiya
From Brian Johnson
Subject: Clarification of AB 2121 Proposal

Thank you for meeting with us a few days back and for speaking with me briefly by phone after that. This email is the follow up I promised. It is not intended to touch on all of the issues in play with AB 2121. Instead, it is a follow up on two ideas that we consider central to a successful policy: the need to articulate an overarching cumulative effects framework and the need to define the purposes of key terms. I also included a quick clarification of why we chose the path we did.

Definition of Bypass Flow and other Terms. I believe you heard this comment loud and clear at our meeting and tend to agree with the basic point, but I'll state it again for your files and clarify why we think our recommendation makes sense as a starting point. The Draft Policy does not really define what the bypass flow is supposed to accomplish, or what methods would be acceptable for calculating it via a site specific study. The final Policy needs to define the terms to avoid years of wrangling over site specific studies after it is adopted. Especially if the formula (replacement for MBF3) is as conservative as it sounds it may be, applicants will have a strong incentive to do site specific work; if we fail to define terms we will be right back where we started in 1997 with endless delays.

Consider again our example (pasted below). The particular numbers are less important than the ideas behind them.



In some places, the Draft Policy indicates that the bypass flow must be large enough to protect all biological functions by itself. But this was accomplished with MBF3 (31 cfs) by calculating Q_{OPT} (which does not protect all biological functions by itself) and then adjusting the line to the right by a couple standard errors. What happens if an applicant wants to do a site specific study? If the policy defines the bypass as that necessary to protect all biological functions, it needs to yield a number to the right of the spawning habitat. If the policy defines the site specific study as Q_{OPT} (9 cfs) then it needs a cumulative diversion test that also protects habitat. We defined Q_S as that which protects

all individual sites except those which are smaller than 15 ft2 for coho and 10 ft2 for steelhead (20 cfs). There are other ways to define the term: it could mean all the habitat (26 cfs), or a percentage of the habitat, or it could be a reference to a physical variable such as depth. (In this stream, the flow that gets a Median Riffle Crest Thalweg depth of 0.8' is about 20.5 cfs. We suggested that this approach might be useful as an alternative to habitat mapping, as a fast way to do a site survey that yields a consistent number. Similarly, the median RCT that inundated the D_{84} rocks yielded a number similar to the February Median.)

Again, the important point is that the Policy needs to define its terms.

The second important observation is that any definition of bypass flow that does not yield a number to the right of all potential habitat needs to be paired with a cumulative rate of diversion criterion that protects biology (not just geomorphology). Otherwise, the final policy will not be supported by the analysis that went into it.

In the next section, I'll explain why I think you need to do this regardless of how you define the bypass.

Cumulative Effects. In our recommendations, the "management objectives" (0.05'/0.10' changes in depth at various thresholds) and small projects rule are central to the cumulative effects framework. We recognize that there are many ways to establish a cumulative effects framework.

We also recognize that our recommendations are still in draft form and are not fully defined. However, the draft policy and evolving staff rewrite suffer from the same flaw, to the extent it is a flaw. If all diversions had a bypass flow large enough to fully protect all biological functions, then it might be possible to define rates of diversion only in terms of geomorphic functions. In the real world, this is not the case: (1) some lawful diversions already exist without bypass flows, and the evolving staff recommendation would permit others through either a small projects test that allows for (2) no bypasses or (3) a February Median bypass. You may be considering allowing for (4) site specific studies (such as those based on Q_{OPT}) that do not protect all possible spawning habitat. Therefore, the Policy needs to define a cumulative rate of diversion test or similar cumulative effects test that accounts for potential harm to fish and wildlife, as well as geomorphology. Otherwise, we'll never know when enough is enough.

You should know by now that we do not consider it an insurmountable flaw that this cumulative effects test will necessarily rely on both policy judgments and expert opinion regarding science, and will not be answered strictly in the literature. Inevitably, we are dealing with a mixed question of policy and science, and using considerable professional judgment. *This is OK.* In a sense, the question of "how much is enough" is as much a policy judgment as a scientific judgment anyway. But the policy should be up front about its judgments and its rationale, so the policy can be implemented and evaluated five years from now for its effectiveness. What is not OK (in my humble opinion) is to fail to state

what the policy is trying to accomplish in terms of cumulative effects on the grounds that the science is uncertain. A reasoned judgment call is better than no judgment call at all.

Why We Structured Our Recommendations As We Did. We solved this "problem" by defining QS in a way that put it toward the right side of the habitat curves, but not to the right of all habitat. Critically, it is *not* a hard and fast bypass flow below which no diversions can take place. Instead, it is a threshold against which to evaluate cumulative diversions. Diversions below QS are greatly restricted and diversions above this threshold are less restricted. We suggested as a starting place a rule that would not artificially change depth by more than 0.05' or 0.1' respectively. Other rules could be devised. (Incidentally we do not consider it a fair criticism to note that the 0.05' rule could be modeled but would be hard to measure in real life. That is true of many of the other decision making rules in the Draft and the Joint Guidelines, and it will be true of the final Policy as well. In any case, the reason this became a hot topic back in the late 1990s is because it is hard to observe the incremental effect of numerous small changes. We knew that already; it was the premise behind the legislation.)

Our recommendations thus rely more on maximum cumulative rates of diversion and less on bypass flows than does the Draft. And it requires the Division to establish a cumulative effects test (i.e. MCD) that includes consideration of biology. We believe this makes sense for a number of reasons.

1. You have to do this anyway. In real life, there are already diversions that have no MBF-level bypass flow. You are preparing to permit more with a small projects rule that allows some new permits with no bypass flow or a February Median bypass flow. *If you do not define this test, how will you ever know when there are too many?*

2. A cumulative rate of diversion test makes more sense as way to manage cumulative effects than a bypass-based policy. The point is to protect the integrity of the natural hydrograph. A rate of diversion orientation is a more elegant solution. Moreover, cumulative rates of diversion are the thing that ultimately matters in the long run. (I don't know if it's even possible to articulate a bypass based cumulative effects test, and it would be murder to try to measure it.) If the Policy cannot define a cumulative effects test, the policy cannot serve its conservation function. Again, if we don't have such a test, how will we ever know when enough is enough?

3. A policy that makes the bypass term cover all biological functions results in a really high bypass term. This will make it very hard for applicants to get water, and I expect them to oppose it fiercely. (This is critically important to diverters, but it is also important for everyone who wants an implementable policy or a path for shifting diversions from the dry season to off stream ponds.)

4. A policy that relies on bypass alone for biology is unnecessary. The bypass and rate of diversion terms will usually exist side by side in permits, so the scientific

review should evaluate the effect of both of them together on both biology and geomorphology.

Generally speaking, the Wine Industry cares most about 3 and TU cares most about 1 and 2. But there is much more to it than that.

I'd like to make a personal point about the politics of the policy. I get the feeling that some Division staff and stakeholders view the TU/Wine recommendations as the product of a political compromise, as if TU watered down our views on what "we really think" in order to find something farmers can both accept. That's not it.

Bill and I genuinely believe that the orientation of our recommendations can do a better job of managing 1 and 2 than the Draft Policy or a revised policy that maintains the same general orientation as the Draft. We're genuinely worried that we'll end up with something that does not adequately address cumulative effects.

Conversely, if we can find a better way to manage cumulative effects that also works better for applicants, we should do that. I think our orientation does that, and there is plenty of room to work out the details in a scientifically meaningful way. All paths toward a final policy will have a considerable amount of science and experience behind them, but there will always remain a considerable amount of policy and professional judgment too. Again, that's OK.

I don't mean to sound hostile or overly pessimistic. Since you're still working on the revised draft, we may be closer than I fear. But I'm worried that to some extent we're still talking past each other.

Brian