Bear River below Combie Dam
Potential Cost of Experimental Flow Improvements

Conditions favorable to mercury methylation are known to exist in the middle Bear River from Rollins Dam to New Camp Far West Reservoir. While the methylation process is extremely complex, many suspect that low flows, reduced oxygen levels, overly-warm water temperatures, and nutrients from both point and non-point sources are likely to contribute to these conditions. Many of these assumptions could be tested through a series of flow-improvement pilot experiments conducted over a 2-3 year period during late spring, summer, and early fall. The USGS -- already involved in a number of mercury-related experiments on the middle and lower Bear -- would be an excellent "lead agency" candidate, though a cooperative effort that includes NID, PG&E, CDFG, and other interests would undoubtedly work best.

The *pilot flow improvement costs* worksheet (PDF, 44 KB) attempts to bracket the costs of acquiring surplus water from NID and/or SSWD for these purposes, either directly, via fallowing, or by re-routing deliveries to SSWD that would normally be accomplished via the Bear River Canal. Critical assumptions include the quantity of water needed, the cost of acquiring that water, and the value of hydropower generation forgone (if any, depending on scenario and at least until 2013) at PG&E's Halsey and Wise power plants along the Bear River Canal. (Under a cooperative inter-agency approach it might also be possible to secure a portion of needed supplies by donation.)

The quantity of surplus water needed is assumed to build on the required minimum release of 5 cfs. Scenario A anticipates a comparatively modest set of improvements, increasing flows to 10 cfs in July, August, and September; to 25 cfs in June and October; and to 50 cfs in November. Scenario B assumes somewhat more ambitious flow improvements in all months, while Scenario C holds July-September flows at 10 cfs but increases flows in June, October, and November quite substantially. (Scenario C could also serve as a hypothetical scenario for improving flows in the lower Bear River below New Camp Far West in accordance with CDFG recommendations circa 1991.)

The assumed improvements are then linked to a series of hypothetical acquisition and/or compensation costs which range from $3.14/AF (what PCWA pays to PG&E under current contracts for water it diverts from the Bear River Canal above PG&E's Wise powerhouse) to at least $60/AF (the assumed cost of fallowing within the South Sutter Water District). While no credit is assumed for the possibility of increased hydropower generation at Combie and/or at New Camp Far West (except in the case of SSWD fallowing, which taken alone would simply re-allocate a portion of existing SSWD supplies within NCFW Reservoir), an assumed re-sale of to the Environmental Water Account (EA) at $85/AF is included as one possible way to offset the costs of the program. (That cost is based on a 2004 agreement between the California Department of Water Resources and the Yuba County Water Agency.)

Based on the above, the "low end" combination of price and quantity would result in an annual water acquisition cost of about $19,000 *per year*, increasing to $1.7 million *per*

year at the “highest” prices and quantities assumed. (A decent mid-range estimate would likely be in excess of $200,000 per year.) On top of these would come the additional costs of public agency involvement, including project design, monitoring, and evaluation.