

Thomas M. Zuckerman

COPY

April 24, 1997

Mr. Byron Buck
California Urban Water Agencies
455 Capitol Mall, Suite 705
Sacramento, CA 95814

**RE: CUWA Presentation to CAL FED
Water Quality Work Group**

Dear Mr. Buck:

As you will recall, after the presentation made by Elaine Archibald to the CAL FED Water Quality Technical Group meeting on Tuesday, April 1, 1997, I asked for a meeting with you to discuss what I perceive to be certain mis-statements and misleading implications included in that presentation. You kindly organized a meeting which took place on April 22, 1997 in your offices at which you and I, Roy L. Wolfe, Associate Director for Water Quality for Metropolitan Water District, and Rick Woodard of the CAL FED staff were present. After a lengthy discussion, I indicated I would address my concerns to you in writing in the form of a summary of our discussions and a list of questions which were posed and remain unanswered.

My principal concern involves the way the draft report entitled "Bay Delta Drinking Water Quality Criteria, California Urban Water Agencies, December 1996 ("CUWA Report") was used in the presentation, together with attribution of problems related to agricultural drainage in the Delta. Statements were made, and impressions left, that continuing diversion of water for municipal drinking water supplies from the Delta Pool would not be possible because of pollution related to Delta agricultural practices. Inasmuch as the Central Delta Water Agency, which I represent, includes over 100,000 acres of agricultural lands which both divert their water supplies from, and discharge their drainage to, the channels of the Central Delta area, it is necessary that these statements and implications be corrected. Hopefully, your organization will in the future be a good deal more careful in how you handle the subject.

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A statement was made to the CAL FED work group that the large majority of total organic carbon (TOC) in the Delta water supply diverted by the State Water Project (SWP) facility is contributed by agricultural drainage in the Delta. The available evidence is distinctly to the contrary. I have addressed your attention to a report entitled "Trihalomethane Formation Potential in the Sacramento-San Joaquin Delta Mathematical Model Development." At page 54 the report states:

"The diagram shows the Sacramento River to be the largest contributor of TFPC at 63 percent. Agricultural drainage (peat and mineral soils) is shown to contribute 30 percent of the total TFPC load. This estimate is similar to a simple mass balance performed by Amy et al. Based on limited data, their analysis suggested that agricultural drainage may contribute as much as 20 percent of the THMFP found in SWP water."

I also have enclosed a copy of Figure 26 which was referenced to in the language quoted above. I have reviewed other data specifically related to dissolved organic carbon (DOC) loading for the Sacramento-San Joaquin Delta provided to me in July of 1996 by the Department of Water Resources. These data support the conclusion that much less than one-half of the dissolved organic carbon experienced at the Banks Pumping Plant is contributed by Delta sources (including San Joaquin River drainage, which is a significant contributor of DOC).

Further analysis of the available data indicates that whatever contributions of DOC are made by drainage within the Delta are largely concentrated during the period in which the first winter rains flush accumulated salts and other substances from the Delta soil into the on-island drains and hence into the river. This typically occurs some time during the period from January through March. If an attempt was made to minimize whatever contribution Delta agricultural drainage is making to total organic carbon (as well perhaps as other potential contaminants), a good deal could be accomplished by not diverting Delta water during this period into potential drinking water supplies.

I probably should point out at this time that the organic carbon contributed by the drainage of Delta soils is the result of the natural breakdown of organic soils in the Delta and is not the result of chemicals added as a part of farming practices. In fact, from the data I have seen in the past, the organic carbon concentrations at the Banks Pumping Plant are significantly higher than at the Clifton Court intake, suggesting that the Clifton Court Forebay (a flooded Delta island) contributes significantly to the TOC loading.

In any event, other than whatever problem TOC may cause during the disinfection process for drinking water supplies, TOC is a necessary ingredient in the food chain which supports the biology of the Bay Delta ecosystem. It is likely that removal of significant TOC from the Delta water supply would have adverse impact upon basic food production in the waterways of the Bay and Delta upon which the various creatures using that system depend.

The CUWA report contains an analysis of desirable levels of total organic carbon and bromides in a raw water supply, assuming certain projected drinking water standards are adopted by the Environmental Protection Agency (EPA). The report assumes EPA will eventually adopt a 40 micrograms per liter limit for total Trihalomethane and a 5 micrograms per liter limit for Bromate, an inorganic byproduct formed by the ozonation of bromide-containing waters. These limits, of course, are much smaller than currently adopted by the EPA. The report further assumes certain treatment methodologies for the removal of Giardia and Cryptosporidium in which TOC and Bromide values become critical.

The report fails to consider other methodologies for achieving proposed EPA standards, as well as the possibility of blending other sources of water with the Delta supplies. With regard to the efficacy of utilizing other methodologies, I left with you a copy of the testimony of E. Robert Baumann and Alvin J. Greenberg which the Central Delta Water Agency presented to the State Water Resources Control Board on November 9, 1992 in the Mokelumne River hearings. The two scientists, among other things, testified that the East Bay Municipal Utility District (EBMUD) could reasonably use a Delta water supply for domestic use in its service area, without regard to mixing water from the Delta with

that diverted from the Mokelumne River at Pardee Reservoir. These experts, incidentally, reviewed in their testimony the treatment practices employed by the Contra Costa Water District (CCWD) which uses a Delta supply for its drinking water distribution successfully. Part of the strategy to be employed by CCWD with its new Los Vaqueros Reservoir is to divert from the Delta when the water quality is best, and then to blend the Los Vaqueros waters with its direct diversions from the Delta.

The CUWA report could very well be characterized as a "worst possible case" scenario both from the points of view of projected EPA standards and the lack of consideration of blending and other treatment techniques which SWP customers might reasonably employ to achieve drinking water standards. It is apparent from the tables included in the report that SWP customers are currently doing a reasonable job of removing total organic carbon through the filtration process. What isn't clear is whether the filtration and disinfection processes reviewed by Professors Baumann and Greenberg in their testimony has been taken into consideration. In that regard I quote the following from page 4 of Professor Greenberg's testimony:

"There are numerous examples of water suppliers taking water from the Delta and meeting all appropriate water quality standards. Sometimes these water districts actually do better than EBMUD in regards to some water quality objectives! The 1991 Water Quality Report for the City of Pittsburg (CDWA Ex 1) notes that its range for 1991 was 0.01 to 0.04 mg/l THMSs with an average of 0.02 mg/l. Comparing this to THM concentrations shown in EBMUD Annual Water Quality Report 1991 (CDWA Ex 2), we find a range of 0.024 to 0.056 mg/l with an average of 0.044 mg/l. The City of Pittsburg takes all its water from the Contra Costa Canal which delivers water from Rock Slough in the Delta. The City of Pittsburg treats the water by chloramination and according to the water treatment facility personnel (September 23, 1992 personal communication), they achieve very low levels of THMs, with third quarter 1992 monitoring results showing THM levels as low as 0.007 mg/l.

The Metropolitan Water District of Southern California, which serves over 15 million Californians with treated Delta water, also achieves satisfactory results. Furthermore, the MWD is experimenting with different treatment methods on a pilot treatment plant basis to achieve still lower levels of THMs with Delta water.

Thus, there exist today adequate and cost-effective treatment methods that can take Delta water, treat it, and end up with THM concentrations in drinking water lower than those now provided by EBMUD when it takes Mokelumne River water and treats it."

We are cognizant of the various blending opportunities which individual SWP domestic water customers have. For instance, in much of its service area, the Metropolitan Water District of Southern California blends SWP water with the Colorado River supply which is apparently quite low in both Bromides and TOC. In some parts of its service area, its customers blend Owens Valley water and ground water supplies with SWP water. In some instances, exchanges are made with agricultural users where better quality waters are exchanged for treated waste water and SWP supplies for agricultural use.

Kern County also employs exchanges which allow the municipal users access to the better quality surface and ground water supplies in exchange for SWP water. In the Bay Area, municipal water customers also have several opportunities to blend SWP water with supplies containing less organic carbon and bromides, whether from Sierra stream sources or local surface and groundwater supplies.

Before a conclusion can be reached that an in-Delta water supply is not suitable for domestic drinking water uses, various opportunities for timing of diversion and separate storage of potential domestic drinking water supplies from the Delta should be studied, other filtration and disinfection methodologies should be considered, and opportunities to exchange or blend Delta water with other high quality sources should be investigated. At the same time, the costs of these opportunities should be compared to the multi-billion dollar costs of constructing an isolated

transfer facility around the Delta to improve only marginally the quality of SWP exports for drinking water uses.

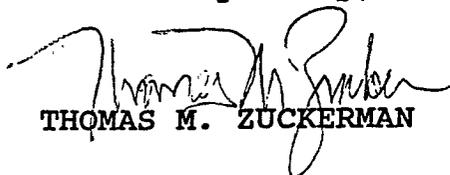
At the end of our discussions you indicated you would try to provide information on the following subjects:

■ What are the bromide concentrations in the San Joaquin River at Vernalis, in the Sacramento River at Greene's Landing, and in the Colorado River supplies?

■ What are the relative costs of different treatment options and blending options to achieve projected EPA requirements for SWP municipal customers?

Again, I appreciate having had the opportunity of meeting with you, and look forward to receiving additional information from you on this subject.

Yours very truly,



THOMAS M. ZUCKERMAN

TMZ:csf

Enclosures

cc: Rick Woodard, DWR
Dante John Nomellini, CDWA