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M E M O R A N D U M

DATE: June 6, 2003

TO: Sutter Mutual Water Company

FROM: Marc Van Camp

SUBJECT: May 7, 2003 Technical Analysis of Sutter Mutual Water Company's Water Needs Prepared by USBR

The purpose of this memorandum is to provide our review in the form of comments, questions, and concerns relative to the May 7, 2003 document titled ***Technical Analysis of Sutter Mutual Water Company's Water Needs*** which was prepared by the Bureau of Reclamation. We believe it is important to recognize that irrigation and agricultural practices are not an exact science and that policy-type decisions are necessary and critical to avoid potentially adverse impacts to the agricultural economy within Sutter Mutual Water Company (Sutter). A lack of good quality irrigation water supply has caused adverse impacts in various areas throughout the world and should be considered when making these policy decisions where uncertain, limited and possibly inaccurate technical data is available. With this in mind, the following are our comments in the order presented in the Bureau's Technical Analysis.

Summary

The Bureau indicates the total water demand for Sutter has been calculated several ways, when in fact, the table presented in this section, with the exception of peak diversion in recent years, is only one way of estimating water demands. The table seems to indicate that it is the Basin-Wide Water Management Plan (BWMP) demand that is presented which is an inaccurate statement. As we submitted to the Bureau in our April 10, 2003 submittal, the BWMP demands for Sutter are estimated as 240,000 AF during a normal year and 260,000 AF during a drought year. The exact values in the BWMP are 234,000 and 254,100 acre-feet. The Bureau has used only the crop acreage presented in the BWMP and used its single method of calculating water demands in presenting the values in the table. When making the final policy decision for arriving at a contract quantity, the technical uncertainty and limitations in estimating agricultural demands should be recognized as well as other methods for calculating water demands.

The Bureau has identified that 220,000 AF will meet the needs of Sutter and that because there have been no reported salinity problems; the risk of salinity problems in the future is minimal. We are unaware of any required reporting of salinity problems by farmers, such that

the Bureau can rely on the fact that there have been no reported salinity problems. Agricultural interests identify and deal with the salinity problems in their particular circumstances without necessarily reporting to federal agencies. In fact, during the negotiation, board members of Sutter identified a significant level of material (calcium, sulfur or other material) that is applied to the fields in order to offset salinity buildup. We are not aware that this is a common practice in other Sacramento River Settlement Contract areas and is a specific action taken by farmers in Sutter's service area as a result of the salinity issue. Advances in crop biogenetics would tend to mask any gradual impacts resulting from increases in soil salinity.

Sutter submitted with its April 10, 2003 material a report on the increasing soil salinity within the Glenn-Colusa Irrigation District service area as a result of past practices and levels of reuse. It is clear and obvious that this same potential exists and may be occurring within the Sutter service area. We believe this is technical support for providing larger contract quantities than suggested by the Bureau which provides no technical support for the salinity issue with the exception that there have been no reported problems.

WNA Methodology

We question whether the Bureau has performed an evaluation of current and past irrigation efficiencies. The Bureau has used a statewide average or an increasing trend in irrigation efficiency as a confirmation of past beneficial use of CVP supplies. We are not aware the Bureau has evaluated whether past use and efficiency are at optimal levels for Sutter or the potential impacts that may occur from requiring increased efficiencies through limited contract quantities.

We note the Bureau also states that if intra-district conveyance totals 10% or less that beneficial use of CVP supplies is confirmed. The only losses within Sutter are deep percolation to the connate groundwater and conveyance losses through vegetation along the conveyance system. Based on the material provided, there is only a minor amount of deep percolation. The percolation that is occurring is necessary to repel the upward movement of connate water and should be considered beneficial use. The losses resulting from vegetation along the canal banks is controlled by Sutter, and provides habitat for numerous species. In fact, other federal agencies would contend it to be a violation for Sutter to reduce losses associated with the vegetation along the canal and drainage system. We believe the Bureau should consider and evaluate losses within a specific area before requiring a certain irrigation efficiency or limiting available water supplies.

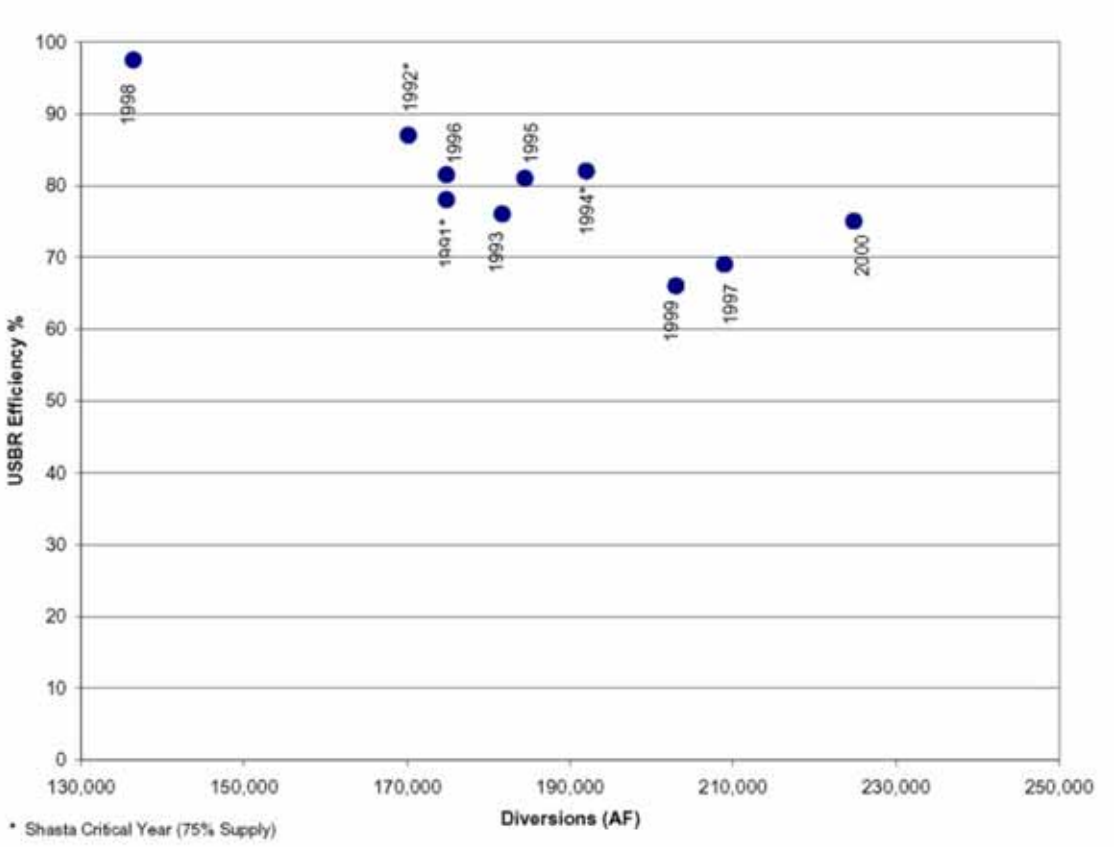
85% Documentation

The Bureau has not provided documentation or support for using 85% irrigation efficiency as the basis for negotiating contract quantities. We believe simply that stating that the CALFED Agricultural Water Use Efficiency or that 85% efficiency was used consistently for long-term contract renewals is not documentation or support. We would expect the documentation and support would clearly identify the benefits and impacts from achieving this level of efficiency. It should be noted that CALFED's approach to achieving this goal is for

meeting defined objectives and is through incentives not through regulatory action such as reducing contract quantities.

Reduction to 80%

It appears the Bureau concludes in this section that Sutter can provide adequate irrigation water supplies to sustain irrigated agriculture based on the period 1991 through 2000. We question this conclusion for numerous reasons; most specifically, we do not believe there is a clear relationship between the Bureau's calculated efficiency and actual diversions as shown below for the period 1991 through 2000.



Based on the above graphic, it appears the Bureau is relying on the six years of 1991 through 1996 to support its position. Of these six years, three were Shasta critical years when Sutter was entitled to only 75% supply. The other three years (1993, 1995 and 1996) had above average spring precipitation, such that it would result in reduced diversions and increased calculated efficiency. We believe it is inappropriate for the Bureau to use these years as its technical support when negotiating a 40-year Sacramento River Settlement contract.

We believe the numerous other factors affecting water management and irrigation practices should be considered by the Bureau when arriving at contract quantities. The uncertainties and variables may not even be captured in the maximum year of diversion.

Crop Water Use and Effective Precipitation

The Bureau has used a reasonable method for determining crop water use. However, we do not believe the Bureau has provided adequate justification for reliance on effective precipitation for arriving at a 40-year contract quantity. The Bureau's document does not identify that its water needs analysis relies on an average effective precipitation of 15,300 acre-feet to help meet crop water needs. The Bureau has provided no documentation on how and why an average effective precipitation can or should be used for contract quantities. The Bureau has used a common and reasonable estimate of effective precipitation. However, Sutter has raised concern with this method for estimating effective precipitation in a flooded environment such as rice production. The Bureau has provided no support for its position.

Sacramento River Settlement Contractors WNA

The Bureau's document provides no explanation as to why it has ignored the water need determination from the BWMP. The BWMP identifies Sutter's need for water to be between 234,000 and 254,100 acre-feet. The Bureau has only used acreage data from the BWMP to perform its separate and different water needs analysis. The 1997 MOU states the BWMP was to be used as a common set of data for the purpose of contract renewal. The Bureau has provided no reasoning for its deviation from this 1997 MOU in the case of Sutter's contract quantities.

Sutter Mutual Water Company WNA

The Bureau has used the most recent past ten years of diversions to support or justify its water needs analysis. However, the only support provided by the Bureau that the last 10 years is the appropriate time period for evaluating water management is the last sentence of the first paragraph which states: "SMWC appears to have implemented practices that increase the district efficiency and reduce diversions to compensate for the mound of artersion connate (saline) groundwater found within boundaries of SMWC."

We believe Sutter has provided adequate information identifying the uncertainty relative to the connate water and the appropriate diversion for water management. Although Sutter has been unable to provide data suggesting the last 10 years of water management has caused soil salinity problems, Sutter has provided significant material supporting the need to provide adequate good quality water for soil salinity management. In addition, the material identifies the potential adverse impacts to both agriculture and the environment that could possibly occur from having an inadequate supply.

Irrigated Acreage Comparisons

We are unclear what the Bureau is concluding in this section. It is our understanding that Sutter has submitted to the Bureau crop production reports that support approximately 52,000 acres of irrigated land, including double crops. Nevertheless, we believe an irrigable acreage of approximately 48,000 acres can justify a contract quantity greater than the Bureau's needs

analysis. In 2000, Sutter provided water to a total of 38,283 acres, of which 1,530 acres were double cropped. In addition, there were 8,464 acres that were non-irrigated. This results in 46,747 acres of irrigable land.

Historic Water Needs and Use

The Bureau has appropriately sited the 1996 NRCS report submitted by Sutter; however, it has neglected to identify and appropriately recognize the numerous qualifiers and uncertainties included in this report.

Salinity Concerns

The Bureau has sited the 1975 Tanji report titled "Water and Salt Transfers in Sutter Basin, California," in this section. It appears the Bureau uses the statement of 1971-73 soil profiles to support its water needs analysis. The average Sacramento River diversion from 1971 through 1973 was 232,716 acre-feet. This quantity is greater than the Bureau's water needs analysis and in line with Sutter's current proposal.

The second paragraph of this section makes further reference to the 1996 NRCS report and states: "Continual productivity indicates the leaching requirement is being maintained." We question whether simply referring to continuous production is ample evidence that the leaching requirement is being maintained. The yields of various crops within Sutter may be impacted even though production continues. An evaluation of actual yields with expected yields or yields from a comparable location would be necessary to make this determination. We do not believe data is in a readily available format to make this determination and are unaware of the Bureau making such an evaluation. We believe it is inappropriate and irresponsible for the Bureau to rely on continued production as the sole measure for maintaining the leaching requirement.

The Bureau seems to suggest that the soil samples taken over the 1971 to 1978 period support the Bureau's position that the needs analysis arrives at an appropriate level of river diversion. We note that the average Sacramento River diversions by Sutter during the 1971 to 1978 period were 230,669 acre-feet, including the critical year of 1977, while excluding the critical year of 1977, results in an average annual diversion of 237,767 acre-feet. For the reasons identified above, we do not believe the references used by the Bureau support its water needs analysis.

Historic Drainage Factor

We are unclear as to the Bureau's argument and position relative to the drainage factor. We find it difficult to reconcile how the drainage factors from the Tanji report and the Bureau's calculation can be approximately equivalent. Diversions from the Tanji report analysis average 240,579 acre-feet while the Bureau's diversion estimate is in the 220,000 acre-foot range. In order to achieve the same drainage index would require a comparable reduction in drainage outflow. This likely would be accomplished through increased reuse. This, again, falls back to

whether soil salinity impacts are or have occurred. The Bureau has overlooked these potential impacts without adequate support.

Revised WNA Based on Future Projections

Sutter has provided information and a declaration by David Richter indicating 26,000 acres of rice is likely and probable in the near future. The Bureau provides no explaination why it believes to be "technically hard pressed" to claim 220,600 acre-feet as a reasonable estimate of future needs based on historic records when actual diversion in 2000 were 226,087 acre-feet with 23,189 acres of rice and 6,294 acres of tomatoes.

Revised WNA Based on Highest Past Need

The Bureau has arrived at a total demand of 220,000 acre-feet assuming 80% district efficiency and allowing for a cushion for low rainfall years, operational problems, and other. In summary, we believe the Bureau has not given adequate credence to the need for water volumes to provide for flexible water management to avoid salinity issues. The risk associated with an inadequate water supply far outweighs any possible risk from a contract quantity in excess of the precise water need within Sutter. We are unaware of any risk associated with a contract quantity in excess of the actual or documented need and have received no verbal or written description of this risk from the Bureau when requested.

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