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October 13, 2005

Mr. John Herrick  
4255 Pacific Avenue, Suite 2  
Stockton, CA 95207

Re: "SWRCB's Hearing on a Cease and Desist Order Against DWR and USBR."

Dear John:

As the SWRCB hears testimony and takes evidence on whether and under what conditions a Cease and Desist Order should issue, you have asked me to comment on the necessity and underlying reasons why the 0.7/1.0 EC standards were adopted."

In setting the water quality objectives for the Southern Delta an array of crops was selected. The crops represented were annual and perennial. The annual crop (beans) water use timings are early spring to mid summer where as the perennial (alfalfa) uses water for the entire growing season. Secondly, the seasonal water use is considerably different with beans at about one-half that of alfalfa. Therefore, the required leaching volume is higher in the alfalfa using the same irrigation water quality. There are also factors which can limit the amount of irrigation water application. The first is related to the stand survival. Alfalfa is sensitive to over watering conditions which can significantly reduce stands from water logging and Phytopthera root rot, ultimately reducing yield. Secondly, the number of required cultural operations such as drying down the soil to support equipment for harvest, along with the time required to to cure and bale can limit irrigation opportunities. Additionally, variation in soil permeability in the Southern Delta and the depth to groundwater can limit the achievable leaching fraction.

The South Delta contains soils with significant variation with respect to texture and structure which leads to differences in permeability. The variability in permeability exists on an area wide and field basis. This variability is pointed out in the "Water Quality Considerations for the South Delta Water Agency 1981" report showing 84 distinctly different soil series (SCS 1992). These soils vary widely in permeability and water retention levels. Adding to the difficulty to achieve the required leaching fraction is the existence of high water tables especially during the winter, which cause upward movement of salts and lack of effective leaching.

For the bulk of the summer (April 1<sup>st</sup> to August 31<sup>st</sup>) the objectives were set at 0.7 mmhos/cm EC following with the last 2 months of the irrigation season (September 1<sup>st</sup> through October) at 1.0 mmhos/cm EC. This objective resulted in the bulk of the alfalfa seasonal irrigation to be 0.7 and a small portion at 1.0 allowing for adequate leaching under most conditions.

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Hence, although beans and alfalfa were selected as representative of crops needing protection from high salinity concentrations, the combination of varying soil types and limitations on application and leaching also require that a certain level of quality be maintained for many other crops. For example, although the many acres of grapes and walnuts may be able to withstand a higher salinity concentration under other conditions, the nature of the South Delta soils, water tables and management practices determines that those and other crops also need to have the current objective maintained or crop yields will decline.

Sincerely,

Terry L. Prichard, Certified Professional Soil Scientist, Agronomist, and Crop Advisor

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