Contaminant Transport, Environmental Impact and Solution Strategies for Food-Processing Waste Water Land Application in the Central Valley, California

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This presentation and accompanied JEQ paper report the strategy for and findings from a study of the land application of waste water from the food industry in the Central Valley, with particular emphases on salinity and nitrogen compounds. The study is carried out as a Special Environmental Project (SEP) under a settlement agreement between The State of California and a major food processor in the Central Valley, California. The SEP integrates several interrelated studies, including (1) waste stream characterization, (2) analysis of the dynamics of the salinity in the Central Valley (2) analysis of environmental impacts on soils, groundwater, surface waters and biota, (3) assessment of technological solutions for impact reduction within the processing facilities, including land application management at the land discharge site, regional large-scale solutions and deep borehole injection; (4) analysis of economical incentives and policy change recommendation in compliance with California? Porter-Cologne Law.

A large data base was developed to support these analyses, which includes waste water quality and loads, water supply data, monitoring data, and maps of land discharge areas. In many other respects, information is lacking. Information on soil properties is insufficient to cover the entire Central Valley. There is also shortage in data from field experiments on subsurface transport of that can help in developing conceptual understanding of food waste water in the subsurface. There is limited data on long term impacts of waste water on biota. Groundwater quality data availability is limited because there is no requirement by California law to document groundwater usage. Some data on groundwater quality is available from State and Federal Agencies and from food processors required to do so as part of their land discharge permits.

To address these issues we devised a strategy which includes the following components: (1) Formulate a probability-based approach to address quantitatively

the uncertainty in parameters and models and fro bracketing the predicted impacts; (2) Perform the various analyses using best available technologies; (3) Develop and apply data analysis strategies to corroborate our hypotheses and models. We will report on our approach in detail, and will present our findings and recommendations.