Central Valley Bacterial Source Identification Screening Study

What is it?

The Source ID Study is a coordinated monitoring effort between the University of California at Davis (UCD) and the Central Valley Regional Water Board's Surface Water Ambient Monitoring Program (SWAMP). This program will monitor and assess ambient water quality of the Sacramento and San Joaquin river watersheds at targeted locations during distinct seasons (snowmelt, irrigation, dry, and storm events) to further assess previously noted elevated levels of pathogen indicators (such as E. coli) and conduct a preliminary screening of potential sources (e.g., human, cow, dog, other). This project will investigate the seasonal occurrence of E. coli and E. coli O157 in the source waters of the Sacramento and San Joaquin rivers and determine the source of fecal contamination through analysis of Bacteroidales. Sources will be grouped to human, bovine, dog and universal (all warm blood animals). In addition, field measurements, dissolved oxygen, electrical conductivity, pH, temperature, and turbidity also will be analyzed.

Major questions being asked by this study are:

1. What are the spatial and temporal trends in bacteria indicator and pathogen concentrations at selected tributaries with in the Sacramento and San Joaquin River Basins?
2. What are the potential sources of the identified bacteria (human, cow, dog, other)?
3. Is there any evidence that beneficial uses of recreation, drinking water, or irrigation water supply are being impacted?

Why is it important to the State?

During initial monitoring surveys conducted both by SWAMP and the Irrigated Lands Regulatory Program (ILRP), elevated concentrations of E. coli were detected at numerous locations throughout both the Sacramento and San Joaquin rivers basins. In many instances, E. coli concentrations

exceeded the US EPA guideline of 235 MPN/100-ml for full contact recreation (swimming). Some sites exceeded the guideline during every sampling event; other elevated concentrations appeared associated with flushing rainfall events. E. coli is an indicator of potential pathogen presence in a system. Exceedances of these guidelines indicate that the water is not healthy for swimming and other recreational uses.

Why is it important to me?

Waterborne outbreaks of disease caused by microbial pathogen infection are of increasing concern to maintaining public health.

How will the information be used?

This project will provide data sets after each sampling event, and fact sheets and a final report at the end of the project. This project provides the opportunity to get a region-wide assessment of ambient water quality conditions and preliminary review of beneficial use protection based on the several indicators. Data from this study will be used by the Central Valley Regional Water Board for management decisions.

Partners: UC Davis, Central Valley Regional Water Board, SWAMP

To learn more about this project click here.