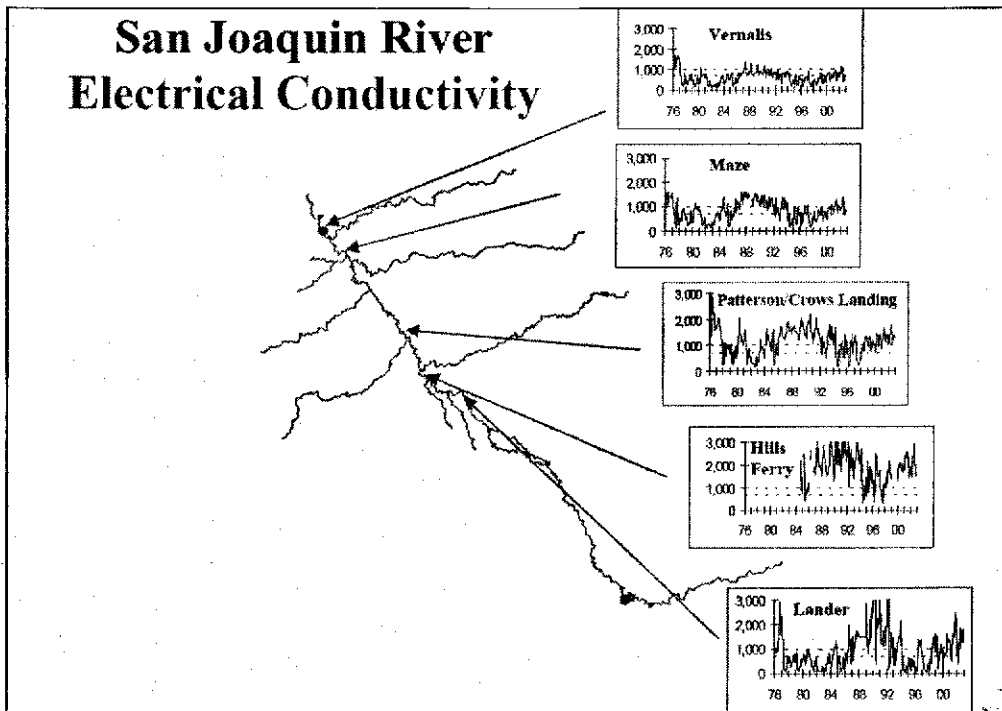


Figure C-3. San Joaquin River Electrical Conductivity at Vernalis and Other Stations



Source: Central Valley Regional Water Quality Control Board

Measures to Control Salinity in the San Joaquin River Upstream of Vernalis

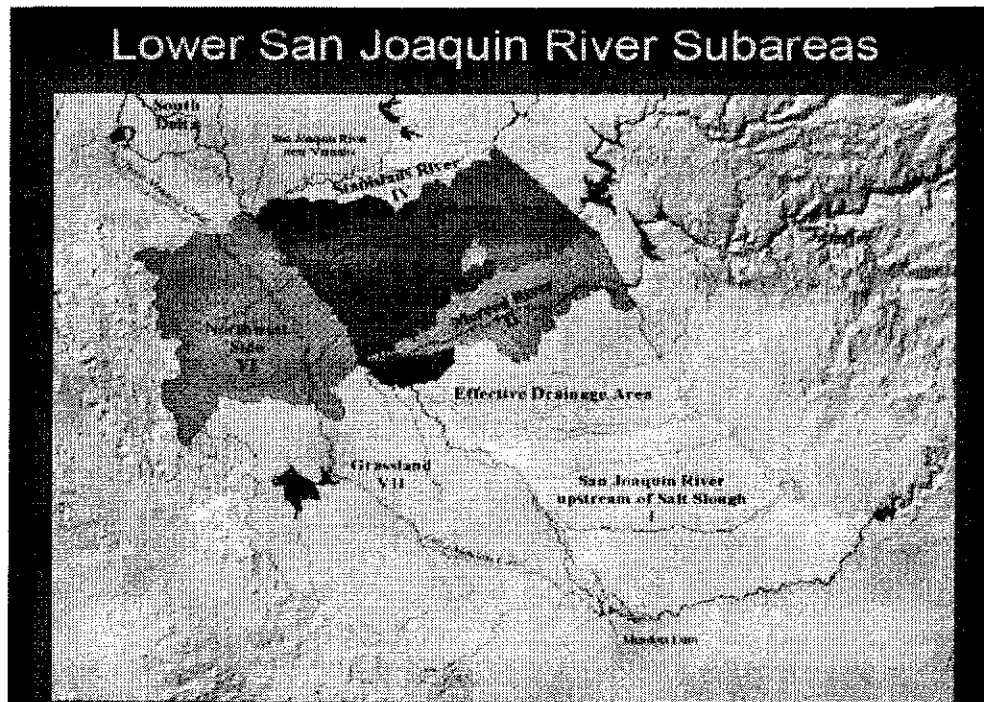
In D1641, the SWRCB recognizes that regional management of drainage water is the preferred method to meet the SJR objectives (D-1641, Page 84). The DWR, Reclamation, and CVRWQCB, as well as many local, public and private agencies have made tremendous efforts to achieve salinity objectives in this area. A significant amount of public and private money has been, and continues to be invested in salinity reduction efforts for the SJR. In order to understand the salinity reduction measures taken, it is important to describe the sources of the salt load that averages one million tons per year in the SJR at Vernalis. In an average year, CVP water supplies carry more than 800,000 tons of salt into the northern portion of the San Joaquin Valley. Most of this salt load originates from the Delta and approximately 350,000 tons of this salt load are ultimately recycled back to the Delta through agricultural surface and subsurface returns and wetland discharges (DWR 2001). Tables C-3 and C-4 contain CVRWQCB information describing the sources of salt and the corresponding loads, while Figure C-4 defines the lower San Joaquin River (lower SJR) areas that contribute salts.

Table C-3. San Joaquin River at Vernalis

Approximate Sources of Salt	Load
Sierra Nevada Tributaries	18%
Groundwater	28%
Agricultural Surface Returns	26%
Agricultural Subsurface Returns	17%
Managed Wetlands	9%
Municipal and Industrial	2%

Table C-4. San Joaquin River at Vernalis

Approximate Sources of Salt	Area of Contribution
I SJR Upstream Salt Slough	9%
II Merced	
III Tuolumne	19%
IV Stanislaus	
V East Valley Floor	5%
VI Northwest Side	30%
VII Grasslands	37%
Total	100%

Figure C-4. Salt Source Contribution Areas of the Lower San Joaquin River

Measures to control salinity upstream of Vernalis include: a) on-farm management activities to reduce subsurface drainage, b) real-time water quality management to maximize the assimilative capacity of the SJR, and c) efforts to improve wetlands discharges.

On-Farm Drainage Management Activities

Drainage management activities involving source control have proven to be effective in reducing salt loads in the SJR. These measures include:

- irrigation water conservation such as use of improved irrigation systems;
- tiered Water Pricing, based on increased water cost for increased water use;
- agricultural tailwater and tilewater control and recycling; and
- agricultural subsurface drainage water reuse through the SJR Improvement Project.

A good example of the effectiveness of these measures has been demonstrated by the efforts of the Grasslands Area farmers as a part of the Grasslands Bypass Project (GBP). Figures C-5 and C-6 shows the reductions achieved in terms of volume of discharge and salt loads. Since the implementation of the