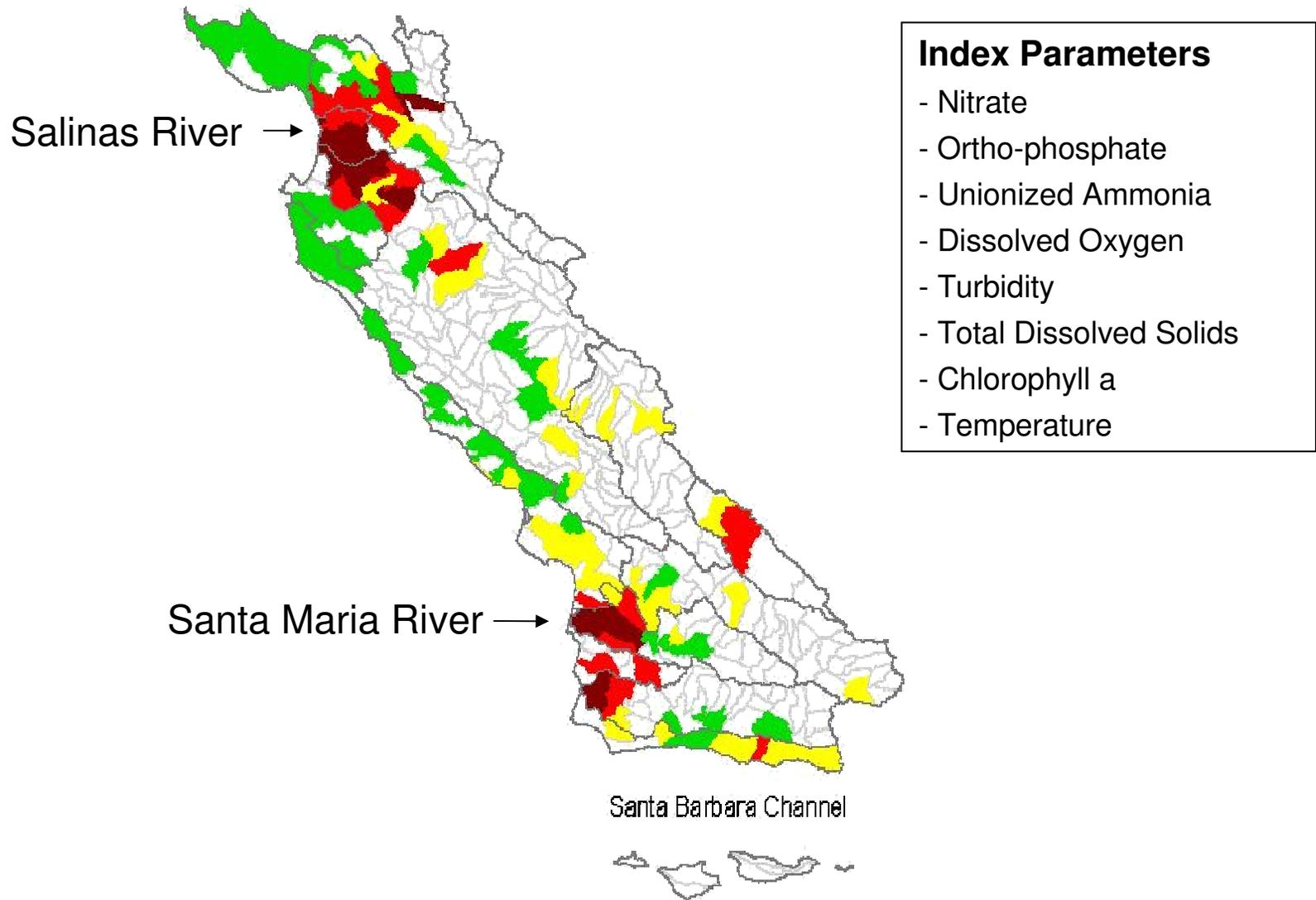


Surface Water Conditions in Agricultural Areas

CCAMP and Cooperative Monitoring
Program Data Assessment

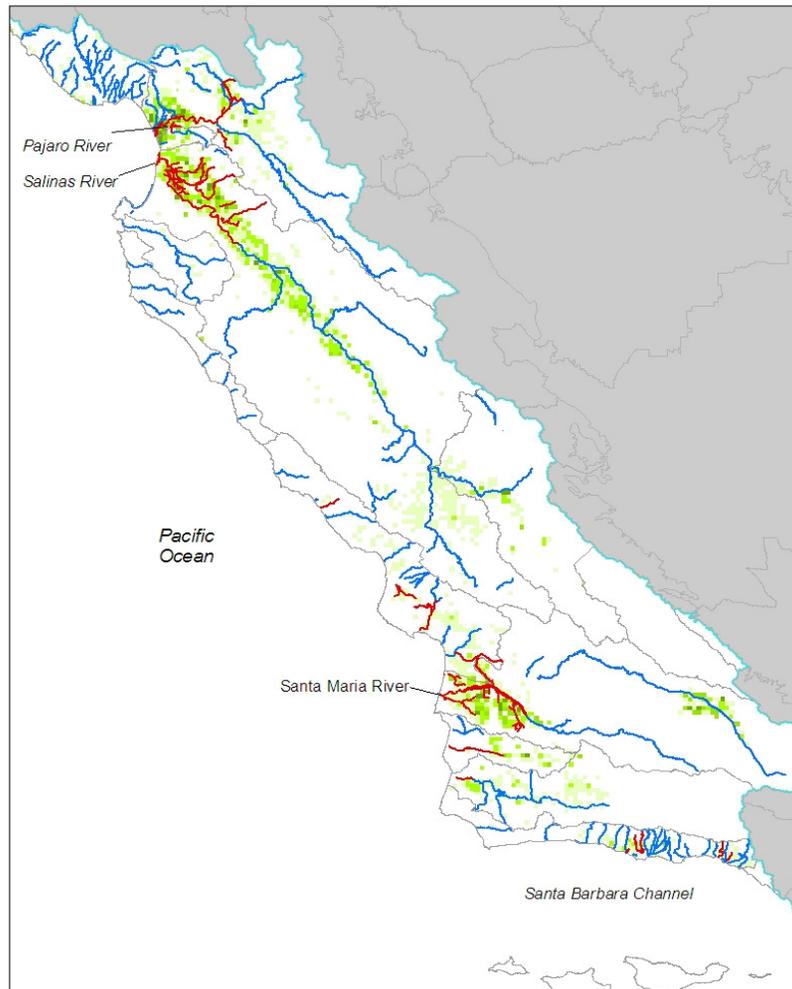
Karen Worcester
Staff Environmental Scientist
www.ccamp.org

Surface Water Quality Index

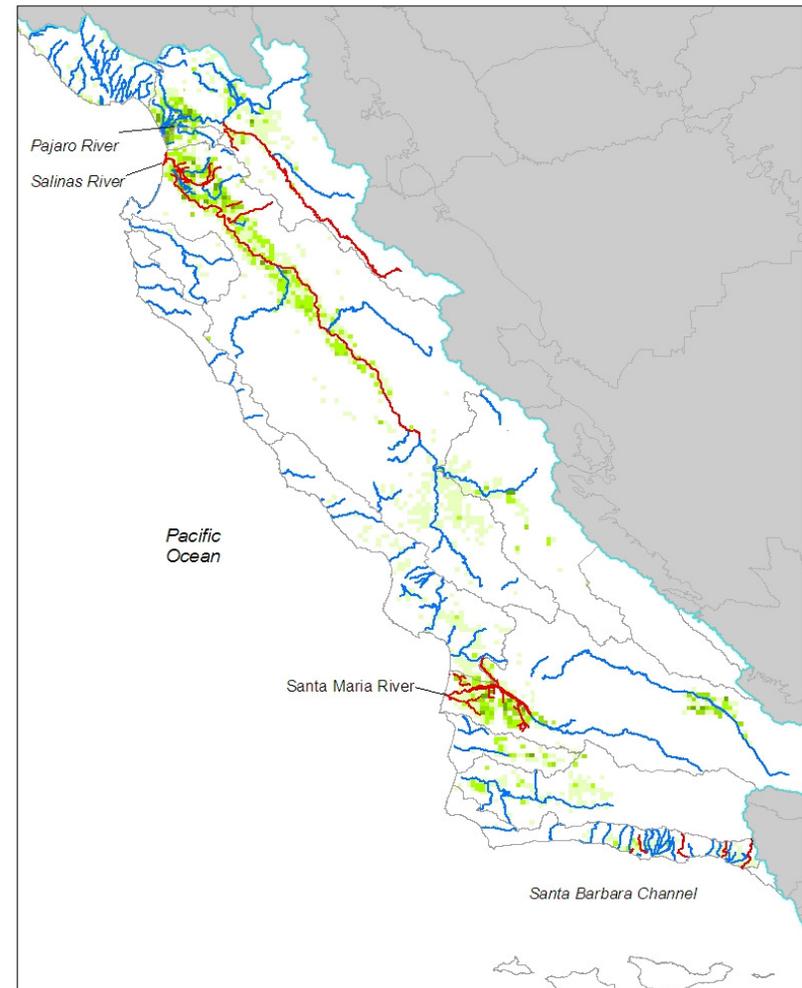


Many impairments in agricultural areas

Nitrate



Toxicity



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CENTRAL COAST AMBIENT MONITORING PROGRAM

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
CENTRAL COAST REGIONAL WATER QUALITY CONTROL BOARD

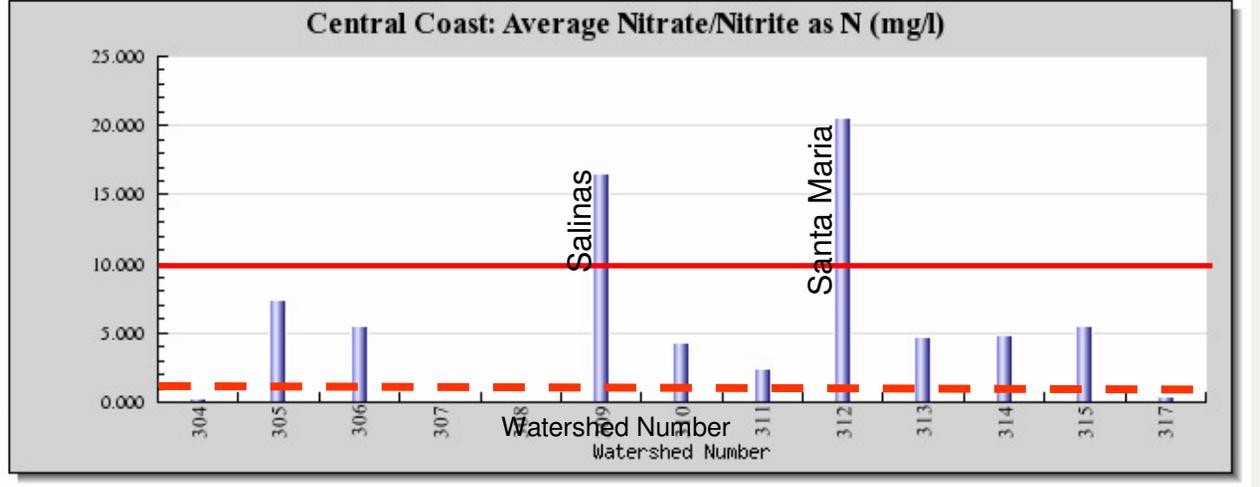
Search
Address: 895 Aerovista Place, Sa Go

Home *Healthy Watersheds:* *Healthy Aquatic Habitat* *Proper Watershed Function* *Clean Groundwater*

Watersheds Basic Water Quality Nitrate/Nitrite as N Monitoring Programs



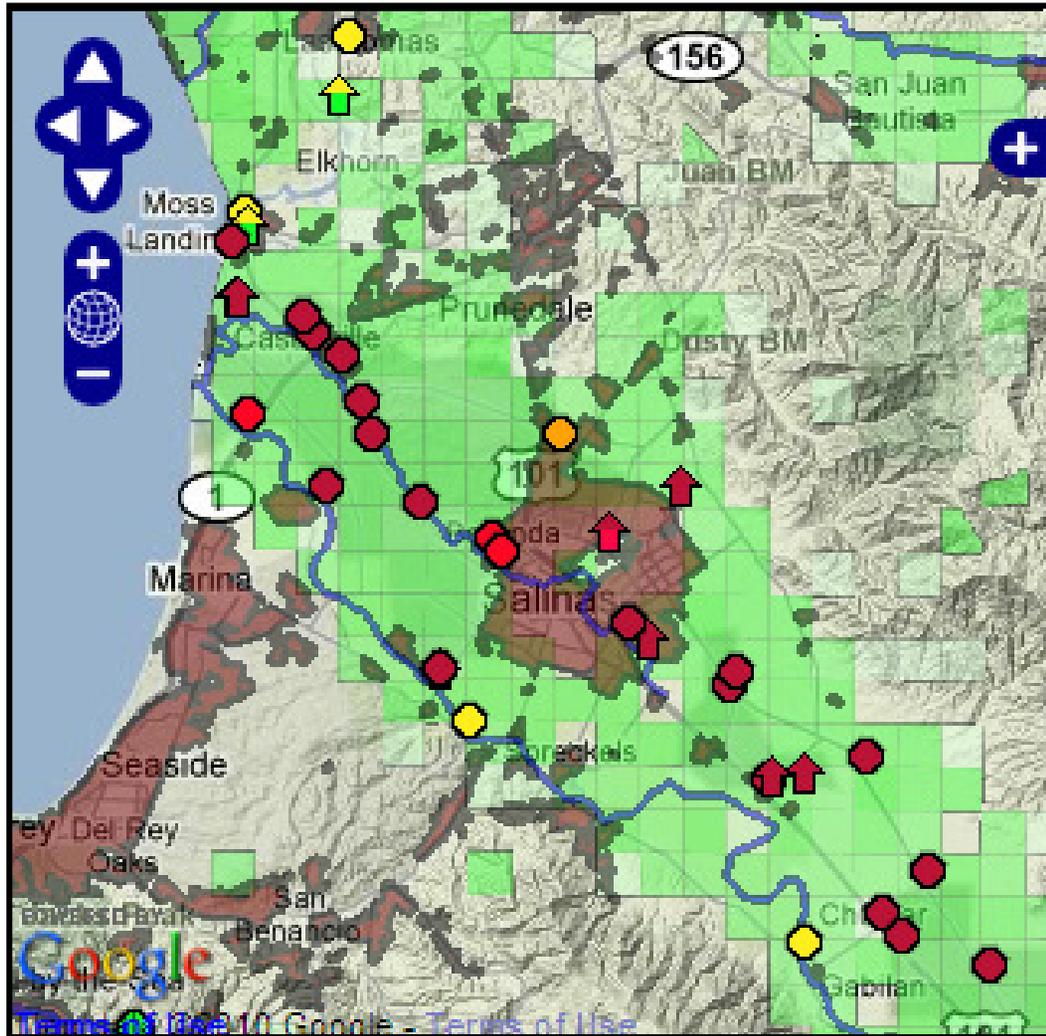
Waterbodies
Monitoring Sites



Map View Options Chart Options

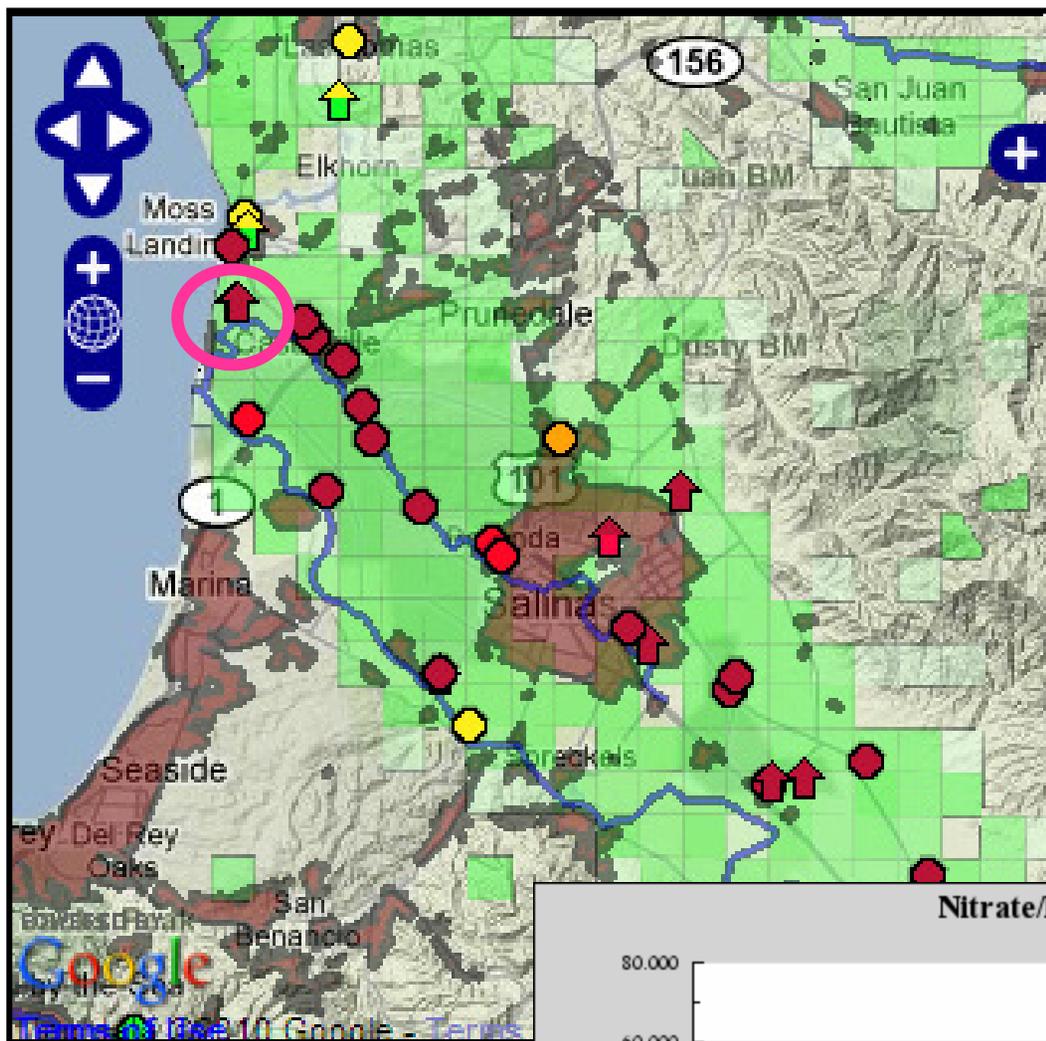
Lat=35.755428 Lon=-121.091309

Condition: ● = Good ● = Slightly Impacted ● = Impacted ● = Very Impacted ● = Severely Impacted



Lower Salinas Area

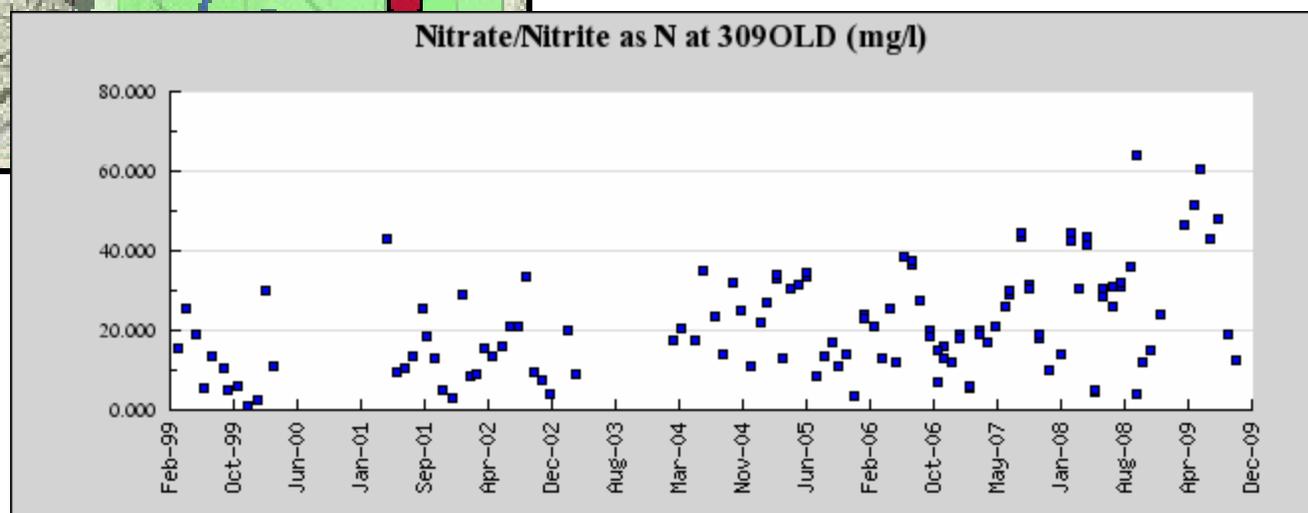
Nitrate concentrations are very high and increasing at a number of sites



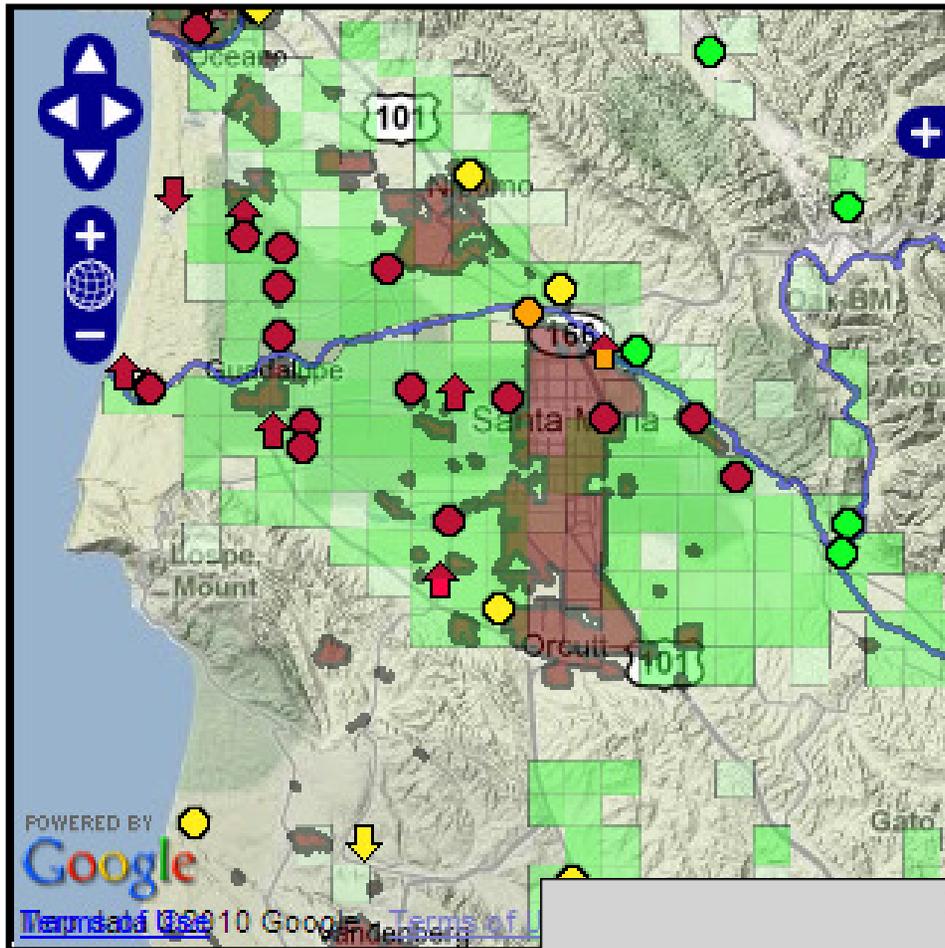
Lower Salinas Area

Nitrate concentrations are very high and increasing at a number of sites

Old Salinas River
Average NO₃-N = 21.1 mg/L



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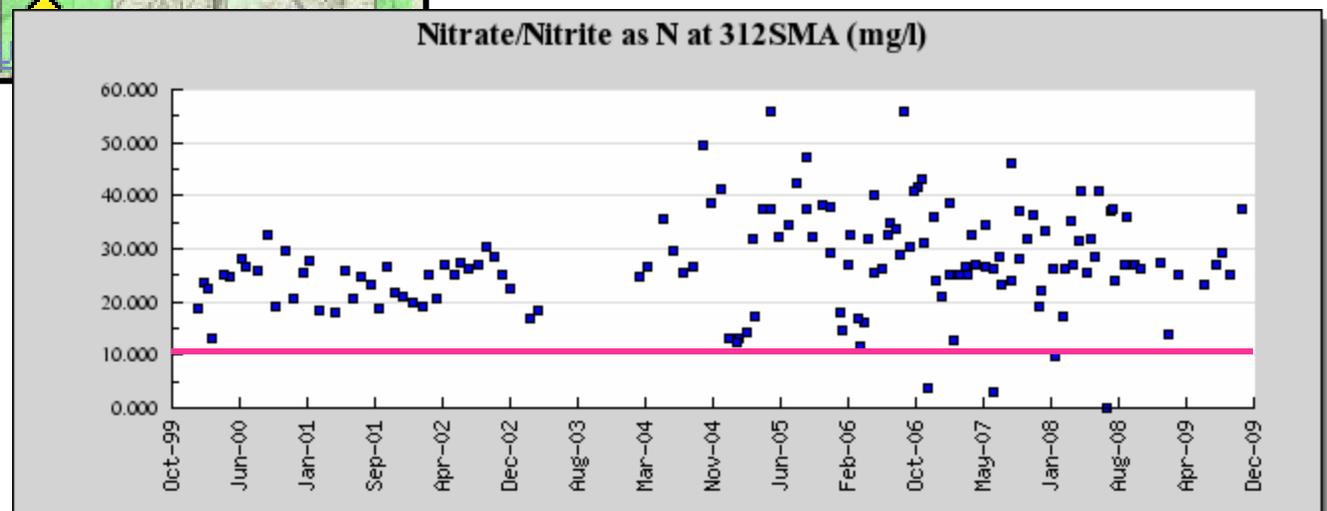


Lower Santa Maria River

Nitrate concentrations are also very high, and increasing at some sites

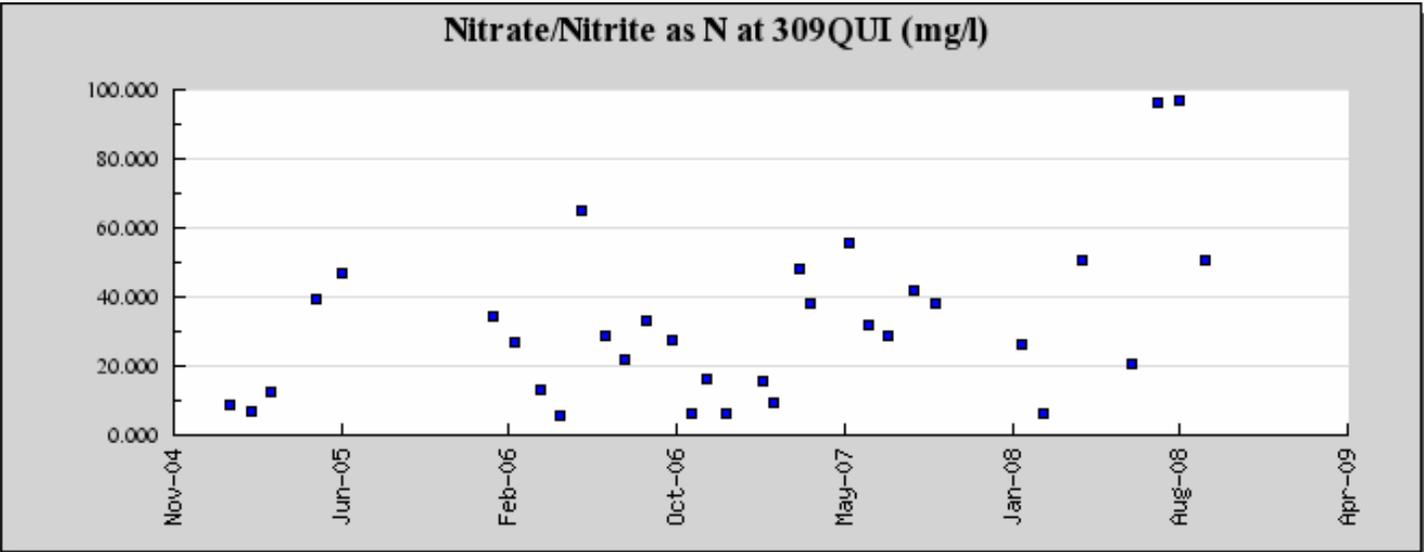
Santa Maria Estuary

Average NO₃-N = 27.4 mg/L

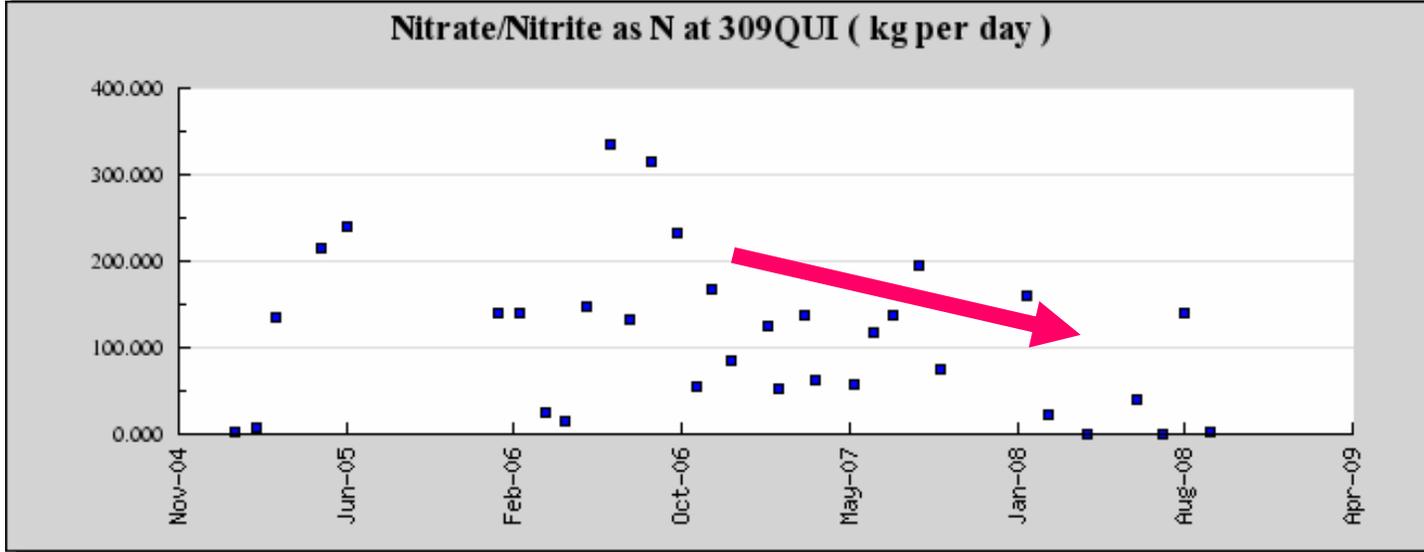


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Instantaneous loads decreasing in a number of locations



Concentrations increasing

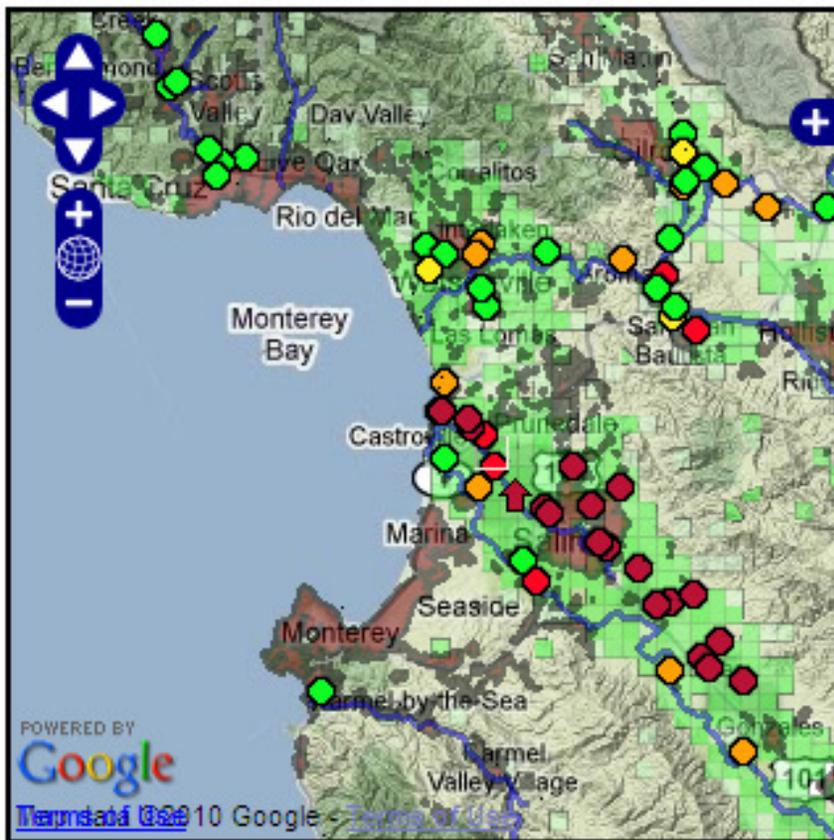


Loads decreasing

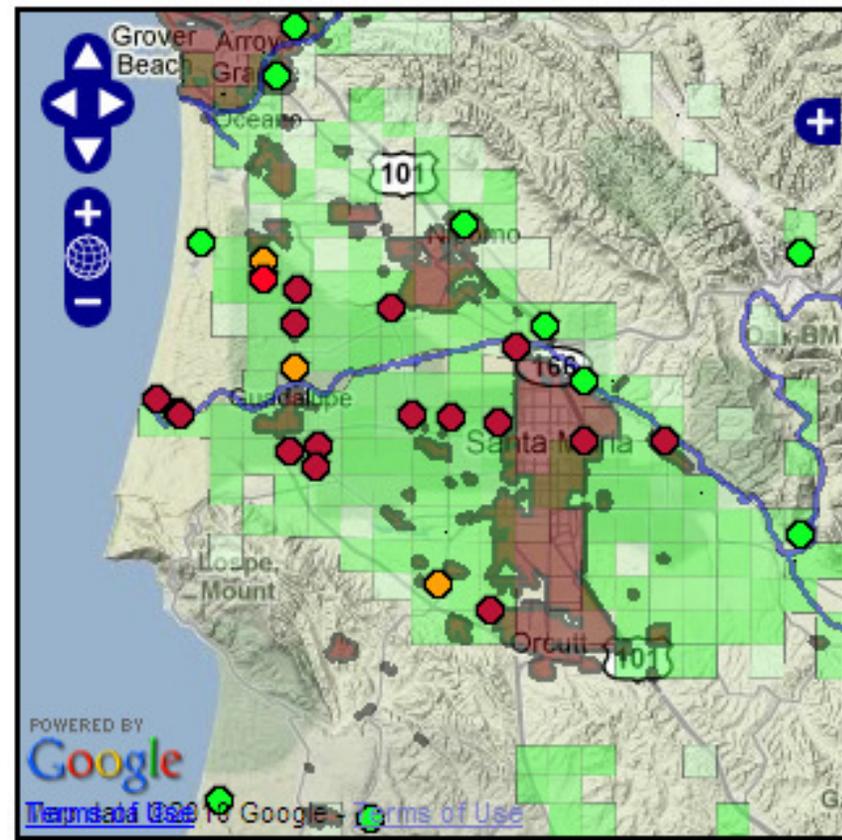
Quail Creek, Salinas Watershed

Salinas and Santa Maria areas are severely impaired by toxicity

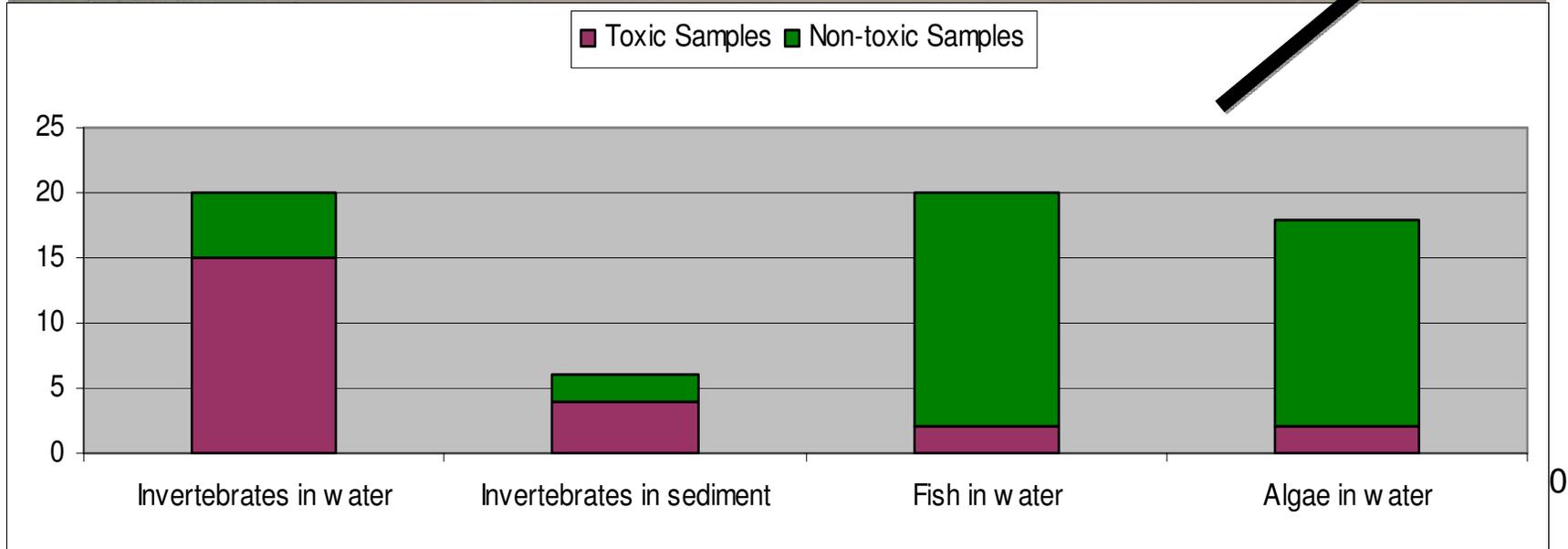
Lower Salinas Watershed



Lower Santa Maria Watershed



Lower Santa Maria River Toxicity



Chemical plumes damage stream ecosystem

Quail Creek discharge to Salinas River



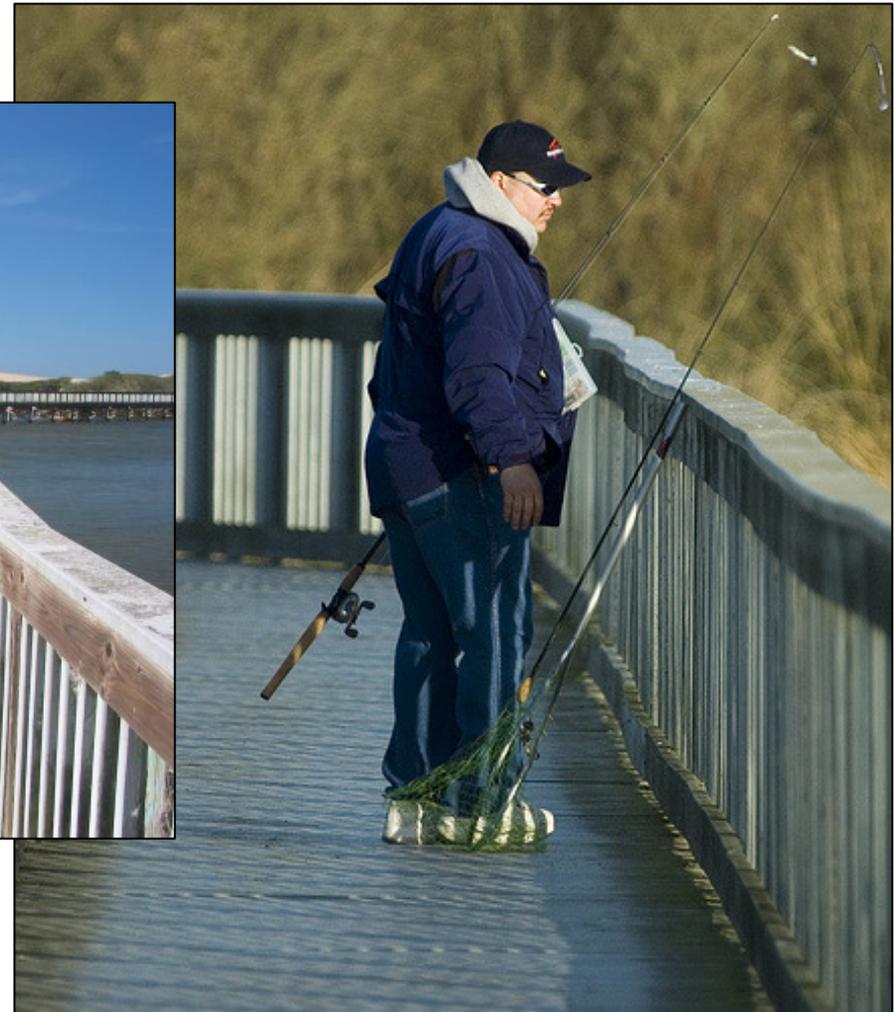
Pyrethroid Pesticide Use in Salinas Area (DPR, 2006)

Highest in State:

- **Percent of study sites with detections (85%)**
- **Percent of sites exceeding toxic levels (42%)**
- **Active ingredients applied (three-fold other locations)**

Study included Salinas River, Sacramento Valley/Feather River, Northern San Joaquin Valley (NSJV), and Imperial Valley

Legacy pesticide concentrations in Oso Flaco Lake are the highest anywhere in recent state and national studies



The lake is used for fishing – we will be working with OEHHA this year to evaluate whether it should be posted.

Impacts to the Marine Environment

- Nutrient discharges from rivers can drive toxic phytoplankton blooms
- Nitrate ratios from Pajaro and Salinas rivers are “extreme” compared to other sources
- Several Marine Protected Areas are impacted by agricultural chemicals



Elkhorn Slough is a National Estuarine Research Reserve and a Marine Protected Area

It is NOT protected from agricultural chemicals

MBARI describes its shallow sloughs as “hyperventilating” because of high nitrate concentrations



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In summary

In many agricultural areas, especially the lower Salinas and Santa Maria rivers:

- Extremely high nitrate concentrations
- Widespread toxicity
- Very poor biological health
- Consequences for downstream estuaries and marine protected areas
- Few improving trends in concentration, but some evidence of load reductions

These waters are not healthy for aquatic life and are not supporting recharge of drinkable groundwater