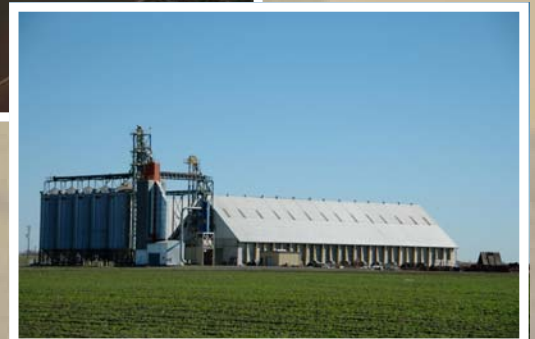
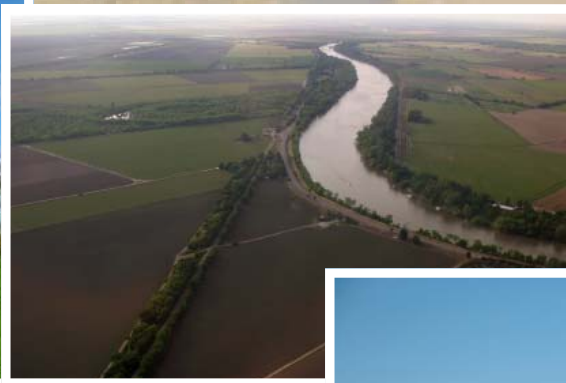
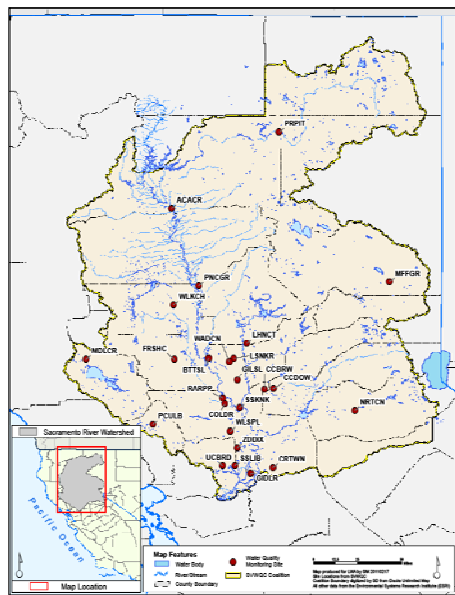


# Improving Water Quality in the Sacramento Valley

The Sacramento Valley is a rich mosaic of farmlands, refuges and managed wetlands for waterfowl and shorebird habitat, meandering rivers and streams that support numerous fisheries and wildlife, including Chinook salmon and steelhead trout, and the cities and rural communities throughout the region. The Sacramento Valley Water Quality Coalition (Coalition) continues to implement its “Regional Plan for Action” to bring together farmers, ranchers, wetlands managers, conservation organizations, water resources managers, resource conservation districts and Agricultural Commissioners to improve water quality for all these beneficial uses of water. The Coalition also partners with the California Rice Commission and coordinates with the Central Valley Clean Water Association to ensure that the Sacramento Valley will be regionally sustainable with respect to water resources—both now and in the future.







## Annual Monitoring Reports Highlight Water Quality Results



Annually, as part of the Irrigated Lands Regulatory Program (ILRP), Larry Walker Associates, an environmental engineering firm with more than 30 years experience in California water quality, conducts monitoring and reports the results to the Central Valley Regional Water Quality Control Board (Regional Board) for the Coalition. In 2011, the Coalition conducted a comprehensive assessment of surface water quality conditions. Similar to the results reported in the Coalition’s 2009 and 2010 *Annual Monitoring Reports (AMR)*, the 2011 results continue to indicate there are “no major water quality problems with agricultural and managed wetlands discharges to the Sacramento River Basin.” From October 2010 through September 2011, the Coalition and its partners collected and analyzed a total of 206 water column samples at 24 sites (yielding a total of 6,710 chemistry analyses). As in past years, more than 97% of all pesticide analyses performed by the Coalition were below detection. There were 137 water samples tested for toxicity (351 toxicity results from 19 sites), with only six of these samples (4.4%) showing statistically significant toxicity. Pesticides were determined to be the cause of toxicity in only one of the five toxic samples. Of the 33 samples tested for sediment toxicity at 18 sites analyzed for total organic carbon, and pyrethroid, organochlorine, and organophosphate pesticides, only 2 showed significant and substantial toxicity. Pyrethroids and chlorpyrifos were determined not to be the likely cause of the toxicity in either of these two toxic samples. Again in 2011, concentrations of nutrients in Coalition’s samples were low, with only one exceedance of water quality objectives for nitrate in 160 samples tested, and no exceedances of water quality objectives for ammonia in 130 samples tested. (See *Nutrients Present at Levels Low* Page 3).

### Water Quality Exceedances in the Sacramento Valley

The Coalition submits “Exceedance Reports” to the Central Valley Regional Water Quality Control Board when monthly sampling results exceed water quality objectives. Where multiple exceedances occur, the Coalition and its subwatersheds have management plans to address the exceedances as detailed below. For more information visit our webpage at [www.svwqc.org](http://www.svwqc.org).

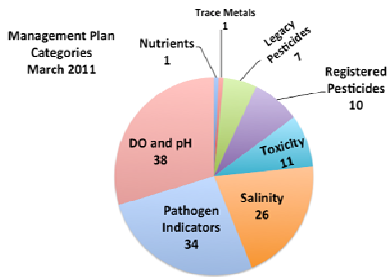
Concern	Exceedances <sup>1</sup> / Samples	Plan of Action
 <p><b>Drinking Water</b></p>	<ul style="list-style-type: none"> <li>• <b>Total Dissolved Solids</b> (64/643)</li> <li>• <b>Nitrate as N</b> (3/826)</li> </ul>	<p>The Coalition, working with the Dixon Solano Resource Conservation District and University of California Cooperative Extension crop advisors developed a Ulatis Creek Management Plan documenting current management practices, Nitrate Source Evaluation Report and are educating growers on the importance of management practices.</p>
 <p><b>Recreation</b></p>	<ul style="list-style-type: none"> <li>• <b>E. coli</b> (243/1078)</li> </ul>	<p>In 2010-2011 the Coalition documented landowner management practices along 24 waterbodies with E. coli exceedances. The Coalition also catalogued potential non-agricultural sources (septic systems, wildlife) in Source Evaluation Reports prepared and submitted to the Regional Board. In 19 of the 24 waterbodies studied, agriculture was not a contributing source to the presence of E. coli in water. Given the public policy concerns associated with potential outbreaks of illness associated with E. coli pathogens, the Coalition will participate in a Central Valley wide study of pathogens.</p>
 <p><b>Aquatic Life</b></p>	<ul style="list-style-type: none"> <li>• <b>pH</b> (73/1142)</li> <li>• <b>Dissolved Oxygen</b> (129/1165)</li> <li>• <b>Chlorpyrifos</b> (19/622)</li> <li>• <b>Diazinon</b> (9/625)</li> <li>• <b>Malathion</b> (11/623)</li> <li>• <b>Diuron</b> (17/425)</li> <li>• <b>Water Column Toxicity</b> <ul style="list-style-type: none"> <li>Selenastrum (19/406)</li> <li>Pimephales (2/239)</li> <li>Ceriodaphnia dubia (34/473)</li> </ul> </li> <li>• <b>Sediment Toxicity</b> <ul style="list-style-type: none"> <li>Hyaella (17/118)</li> </ul> </li> <li>• <b>Simazine</b> (4/392)</li> </ul>	<p>Funded by Proposition 50, ranchland advisors from the UC Cooperative Extension conducted a study focused at three upper watershed sites to understand the various biological and physical factors (including Agricultural practices) that influence DO levels in local streams. As a result it was determined the source of the exceedances were natural wetlands in the Sierra and Indian Valleys, not irrigated pasture operations.</p> <p>A vibrant aquatic ecosystem that supports fish and waterfowl alike is important to agriculture. Where toxicity occurs the Coalition informs growers of the source and works to improve pesticide application and irrigation water management practices.</p>
 <p><b>Agriculture</b></p>	<ul style="list-style-type: none"> <li>• <b>Electrical Conductivity</b> (165/1158)</li> <li>• <b>Boron</b> (33/291)</li> </ul>	<p>Salinity levels in water is important to the continued viability of agriculture in California. While the Sacramento Valley has limited areas of elevated salinity, the Coalition is actively participating in the multi-year CV SALTS basin planning process.</p>

<sup>1</sup> Reported “exceedances” are either numeric objectives formally adopted by the Water Board or based on the numeric interpretation of the narrative objectives.

# Stewardship and Focused Action Hallmarks of Plan to Protect Water Quality

## 2009-2012 Management Plan Focus Actions

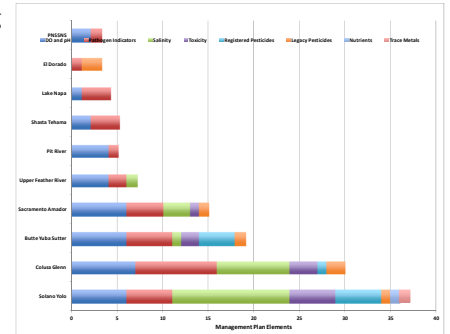
Good water quality is vital to the success of Sacramento Valley agriculture and sustaining healthy wildlife habitats. As the California Department of Water Resources indicates in Bulletins 160 and 118, surface and ground water quality in the Sacramento Valley are “generally excellent” (*California Water Plan Update 2009*). Where irrigated agriculture is a source of water quality impairment, the Coalition and its partners are actively working to address this through targeted management plans actions, such as source evaluation and identification, outreach and education, surveying Coalition members to determine the existing management practices used and, when warranted, establish a schedule and goals to increase management practices.



In February 2009, the Regional Board approved the Coalition’s first comprehensive Management Plan, which details the Regional Plan of Action to address multiple exceedances of water quality parameters at a given site within a three-year period. Within the Coalition’s ten subwatersheds, site-specific management plans for registered pesticides and toxicity receive the highest priority for

implementation with legacy pesticides and trace metals a medium priority and salinity (including conductivity and TDS), dissolved oxygen, pathogens, and pH a low priority, since these parameters have the highest number of potential non-agricultural sources and causes.

With less than 25% of Management Plan requirements triggered by exceedances of Toxicity (11), Registered Pesticides (10) trace metals (1), or Legacy Pesticides (7), the Coalition monitoring results reflect the stewardship of water quality already in existence. Over 75% (98 out of 128) of the Coalition’s Management Plans are related to Salinity, pH, DO, and E. coli whose origins the Coalition is actively working to identify through data evaluation, source identification and baseline management practices surveys when irrigated agriculture is identified as a potential source.



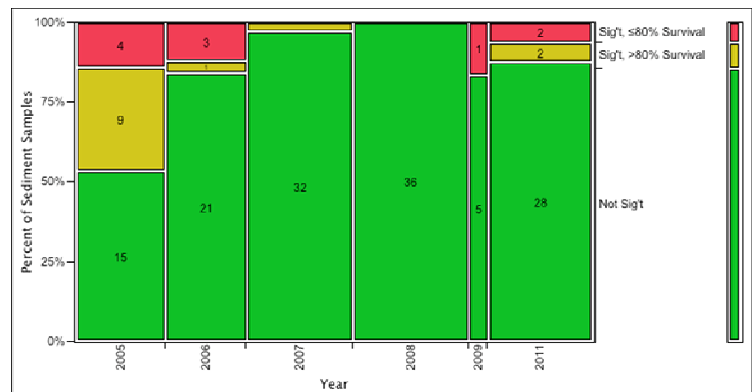
## Nutrients Present at Low Levels in Sacramento Valley Agricultural Water

Since 2005 the Coalition has analyzed 826 water samples collected from 18 sites for nutrients, including nitrate, nitrite, total Kjeldahl nitrogen (TKN), ammonia, total phosphorus, and dissolved orthophosphate. Only 3 exceedances (both nitrate) of water quality standards have been detected. Ammonia concentrations, a focus of federal and state water quality regulators, were typically below quantitation limits and did not exceed the temperature- and pH- dependent national water quality criterion for this parameter in any sample. The Coalition and its partners in Solano County have begun to evaluate potential sources for ammonia on Ulatis Creek, including supply water quality, natural background, non-agricultural discharges, and agricultural inputs to determine the source of the only two exceedances that were recorded in the Sacramento Valley. If irrigated agriculture is identified as a source, action will be taken to prioritize management practices specific to nutrients, including continuing outreach to landowners, and tracking progress on implementation of management practices.

## Pyrethroids’ Toxicity Trends Downward in Sacramento Valley Ag Water

The Coalition, in part due to increasing attention on pyrethroids in the Delta, has focused its efforts to better understand pyrethroids, so that efforts to remediate sources can be undertaken. Concerns about pyrethroids in the Central Valley are due to their increased agricultural and urban use, and potential linkage to the Pelagic Organism Decline (POD) in the Sacramento-San Joaquin Delta. *Hyalella* and *Ceriodaphnia* are widely accepted indicators for pyrethroids and the health of an ecosystem. High survival rates (shown in green on the chart below) of *Hyalella* and *Ceriodaphnia* commonly occur in testing done by the Coalition .

The declining levels of *Hyalella* toxicity in the past several years show pyrethroids in sediment are rare in Sacramento Valley agriculturally dominated waterbodies, even with the use of pyrethroids increasing. Pyrethroids were monitored by the Coalition in 117 water samples from 19 sites in 2005 and 2006. No pyrethroids were detected in 1,108 total analyses in water. In 2007, the Coalition shifted from water column to sediment testing with similar results. From 2007 to 2009, only one of the 75 sediment samples tested with the sensitive invertebrate *Hyalella azteca* was toxic enough to trigger the pyrethroid analyses. (Over a 5-year monitoring period, from 2005-2009, the proportion of samples with statistically significant (indicated in red and brown on the chart) toxicity trended downward and has remained low in 2011 monitoring results.





## Improving Groundwater Quality in the Sacramento Valley

In April 2011 the Central Valley Regional Water Quality Control Board certified the Environmental Impact Report (EIR) for the Long-Term Irrigated Lands Regulatory Program (ILRP), which will incorporate groundwater quality into the existing surface water program. For the Sacramento Valley, the Department of Water Resources has indicated that:

“Groundwater quality in the Sacramento River Hydrologic Region is generally excellent. From 1994 through 2000, 1,356 public supply water wells were sampled in 51 of the 88 basins and subbasins in the Sacramento River HR. Samples analyzed indicate that 1,282 wells, or 95 percent, met the state primary MCLs for drinking water (Bulletin 118-2003, DWR). The Coalition has begun building on this and other local, state and federal agency data sources to characterize groundwater quality and to develop an action plan to protect groundwater quality.

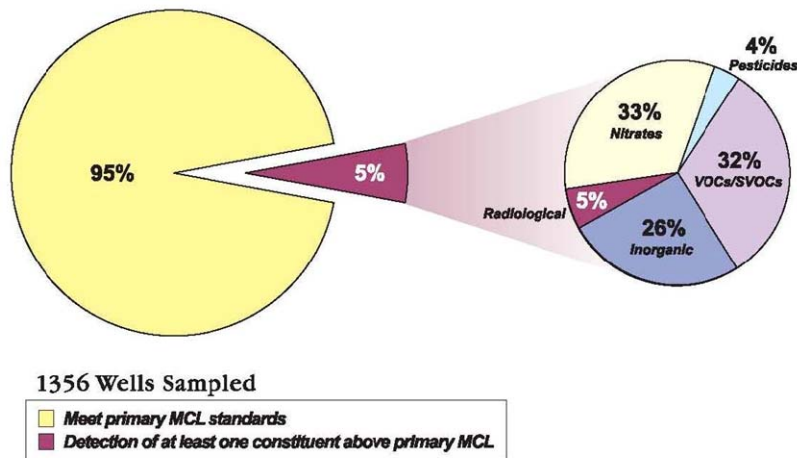


Figure 34 MCL exceedances in public supply wells in the Sacramento River Hydrologic Region



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