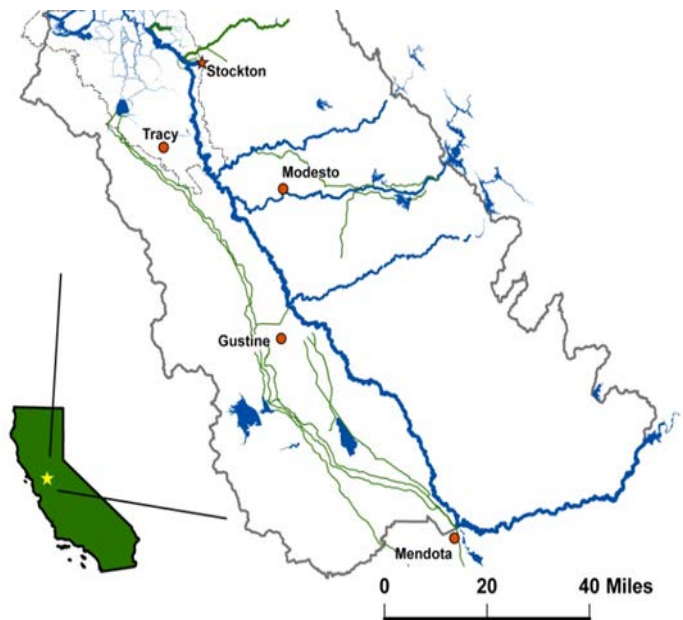


Total Maximum Daily Load Progress Report	
Regional Water Board	Central Valley, Region 5
Beneficial uses affected	WARM MIGR, WARM SPWN, COLD MIGR, WARM, COLD
Pollutant(s) addressed:	Oxygen demanding substances
Implemented through:	NPDES Permits, Waiver of WDRs
Approval date:	January 2005

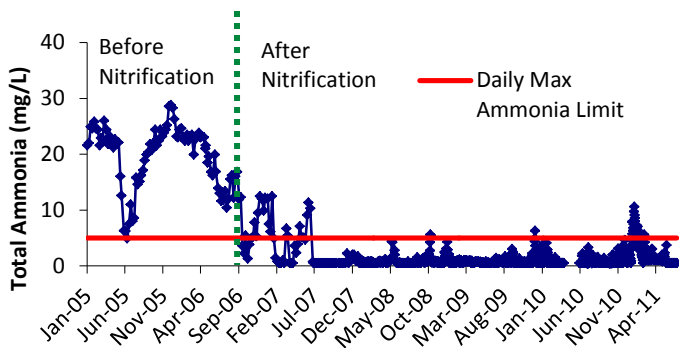
Stockton Ship Channel Low Dissolved Oxygen TMDL	
<b>STATUS</b>	<input type="checkbox"/> Conditions Improving
	<input type="checkbox"/> Data Inconclusive
	<input checked="" type="checkbox"/> <b>Improvement Needed</b>
	<input type="checkbox"/> TMDL Achieved/Waterbody Delisted

**TMDL summary:** The Stockton Deep Water Ship Channel from the City of Stockton to Disappointment Slough experiences seasonal periods of low dissolved oxygen. This condition results from loading of upstream oxygen demanding substances from point and non-point sources, reduced flow through the channel and increased residence time due to channel geometry. Low dissolved oxygen conditions stress aquatic species and can delay Chinook salmon migrating upstream on the San Joaquin River. In 2005, the Central Valley Regional Water Quality Control Board adopted a phased TMDL. Phase I required water quality studies to be completed and alternate means developed to address the impairment. Phase II currently underway requires development of load and waste load allocations. The TMDL is implemented through NPDES permits, 401 Water Quality Certifications and a conditional waiver for irrigated lands. An aeration facility was constructed in the Channel as an alternate means to increase DO concentration, while point and non-point sources continue to decrease their loads.

### San Joaquin River Watershed



### Stockton WWTP Ammonia Concentrations 2005-2011

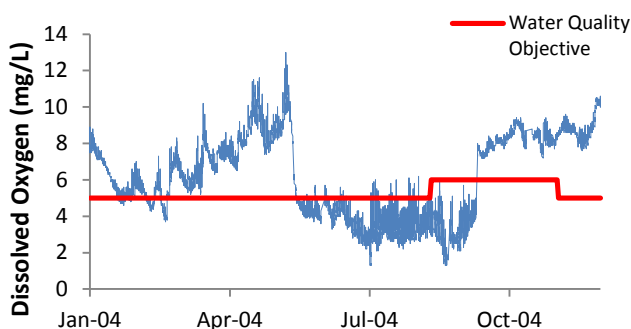


### Water Quality Outcomes

- In 2006, the City of Stockton installed nitrifying biotowers at the wastewater treatment plant to reduce ammonia loading upstream of the Channel.
- Since July 2007, the City of Stockton's nitrification system has reduced the effluent ammonia-N concentration.
- Since 2007, water quality monitoring data has shown increased dissolved oxygen conditions in the Stockton Channel.

### Stockton Ship Channel Dissolved Oxygen Concentrations: Dry Year 2004 versus Dry Year 2009

#### 2004 DO Concentrations



#### 2009 DO Concentrations

