

# Upper Feather River Watershed Irrigated Lands Program Prop 50 - SWRCB

## Dissolved Oxygen Study Summer 2008 Update

A study focused at 3 bottom valley sites provides an opportunity to understand the various biological and physical factors (including Ag practices) that influence DO levels in local streams

### Overview

**Dissolved Oxygen (DO):** Amount of oxygen dissolved in water

**Sources:** diffusion from the air, aeration, product of photosynthesis,

**Controlling Factors:**

-Biological

-Aquatic Vegetation  
-Microbial Activity

-Physical

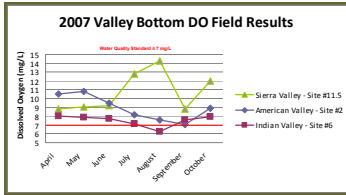
-Water Temperature  
-Surrounding Geology/Soils  
-Groundwater Loss/Influx  
-Stream Channel Shape/Form  
-Dissolved Organic Carbon (DOC)  
-Water Flow

O<sub>2</sub> is produced by aquatic vegetation during the day and consumed at night

As water temp. ↑, DO ↓

**SWRCB DO Standard: ≥7mg/L**

**2007 Phase I Field Data:**



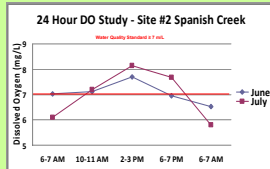
### American Valley

**Site # 2: Spanish Creek below Greenhorn Creek Confluence**



Photos of Study Site #2 - Spanish Creek below Confluence with Greenhorn Creek, aquatic vegetation and bullfrog. Same site used for Phase I Sampling.

**2008 Field Results (June-July)**

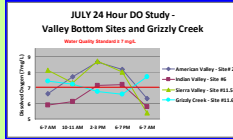
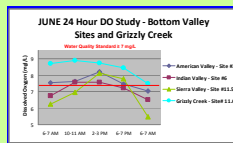


### Field Procedures

**Data Collected over 24 Hour Period**

-Data collected at valley bottom sites in addition to downstream sites in Sierra Valley and Indian Valley  
-Constituents Measured:  
- Air Temp, Water Temp, DO (mg/L & % Sat), pH, EC, Flow, Quantify and Identify Aquatic Vegetation  
-Water Samples Collected at Valley Bottom Sites and analyzed at Dr. Tate's lab - UC Davis.

**June & July 2008 Results - 24 Hour DO Study Valley Bottom Sites and Grizzly Creek**



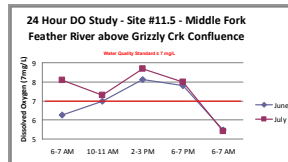
### Sierra Valley

**Site # 11.5: Middle Fork Feather River above confluence with Grizzly Creek**



Study Site #11.5 - Middle Fork Feather River, railroad crossing above confluence with Grizzly Creek

**2008 Field Results (June-July)**

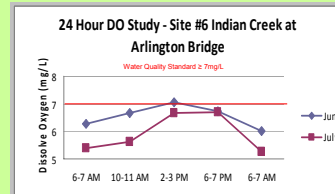


Middle Fork Feather River Study Sites, Aquatic Vegetation, Grizzly Creek

### Indian Valley

**Site # 6: Indian Creek at the Arlington Bridge**

**2008 Field Results (June-July)**



Study Site #6 - Indian Creek at Arlington Bridge



Additional study sites on Indian Creek downstream from Site #6. Additional sites were selected to determine the effects of turbulence on DO levels.

**Study Findings Thus Far...**

-Significant swings in DO over a 24 hour period have been observed at the three valley bottom sites suggesting DO levels may likely be attributed to a combination of biological factors (aquatic vegetation, microbial activity, etc.) and physical controls (water flow, water temperature, DOC, etc.)  
-Turbulence did not always result in increased DO levels (Indian Valley)  
-Past DO exceedences have occurred primarily in July, August, and September, when water flows are the lowest of the season and water and air temperatures the highest of the season  
-More information is needed to determine how irrigated Ag practices may influence DO levels  
-Nutrients (Phosphorus and Nitrogen) have not been identified in excess of SWRCB standards in the UFRW.