

Community Clean Water Institute Winter Water Quality Report, Salmon Creek at Bodega

SAMPLING PLAN:

Weekly plus storm event grab samples during the rainy season of 2006-2007, November through March.

SAMPLING METHOD:

Bucket and rope were lowered from the east side of the highway bridge in Bodega. The bucket is rinsed twice with the sample water, and then pulled up and the final sample poured into a sterile whirl pak bag.

All analysis occurred at CCWI's office within 48 hours of sampling.

ANALYSIS METHOD:

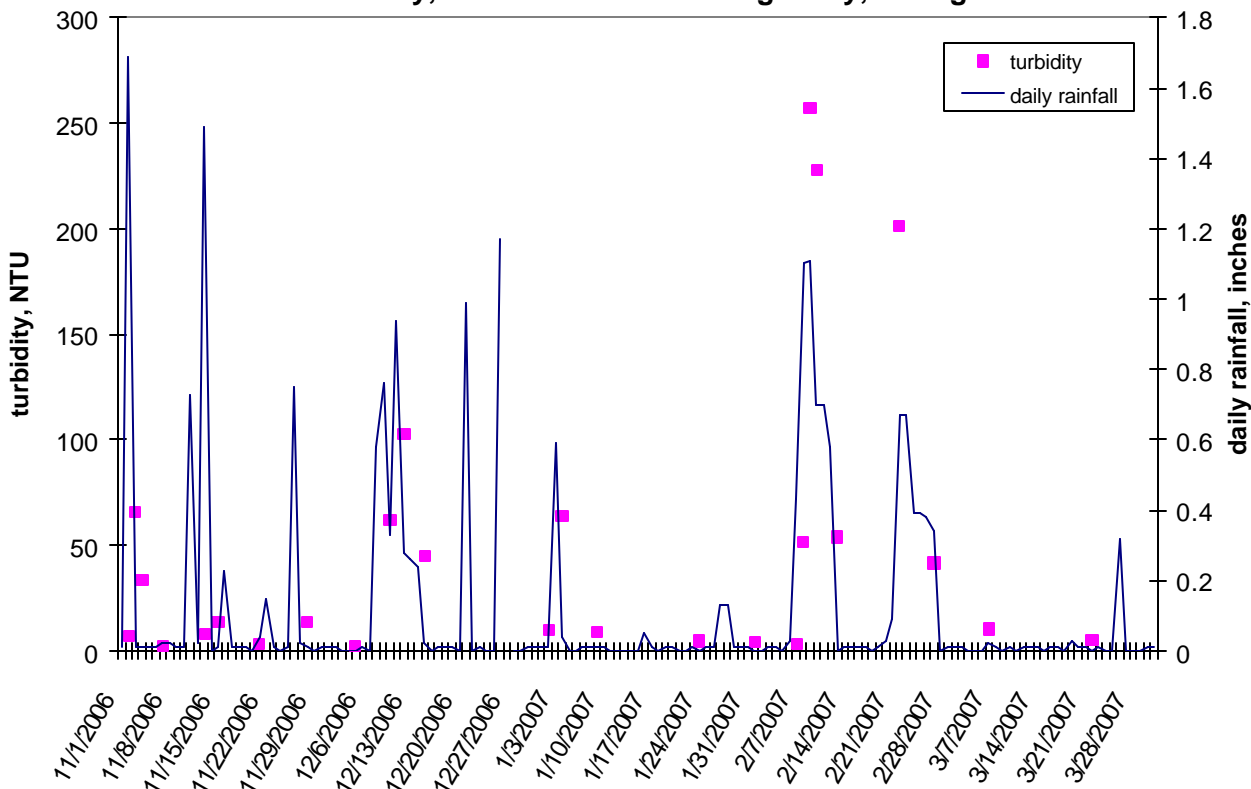
Turbidity method: EPA180.0: Hach 2100 Portable Turbidimeter, calibrated quarterly, secondary standards used as needed as accuracy check.

Nutrient method: EPA300.0M: Dionexx ion chromatograph, calibrated with each eluant change and every instrument run begins and ends with a standard run and a blank run.

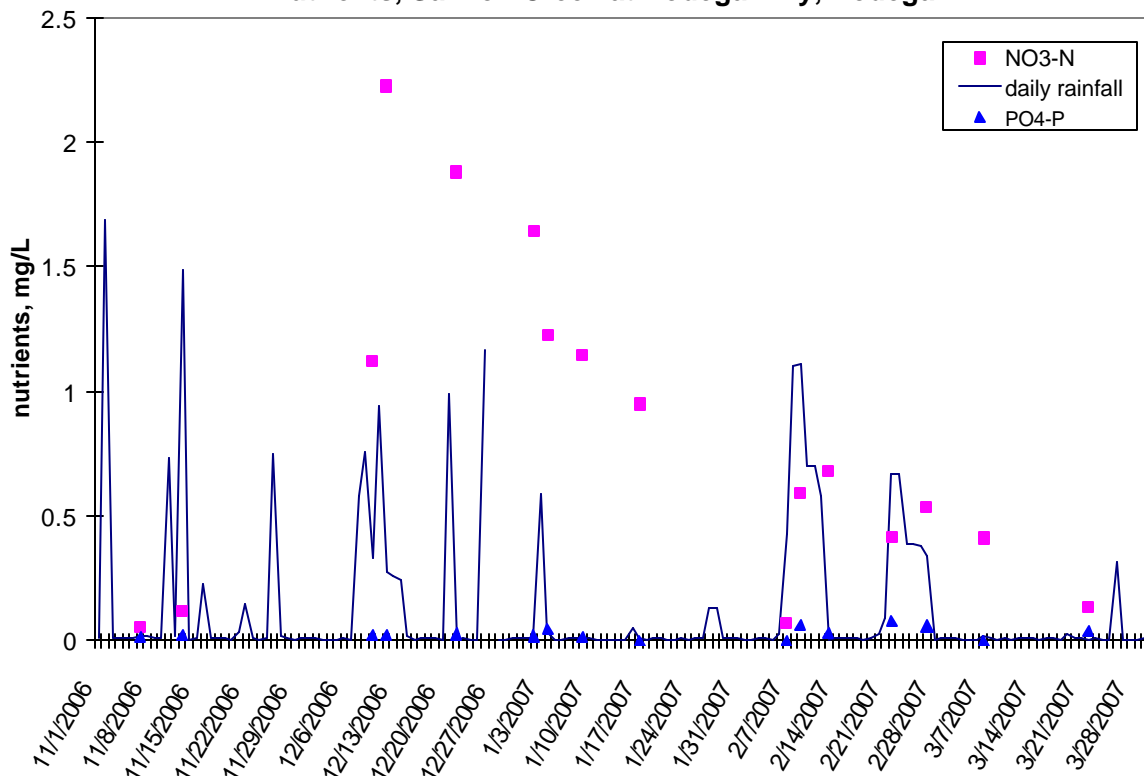
Conductivity method: EPA120.1: Oakton EC tester probe calibrated before use.

Salmon Creek at Bodega Highway, Bodega, CA							
Sampling date	Sampling time	Conductivity <i>uS</i>	Turbidity <i>NTU</i>	NO3-N <i>mg/L</i>	PO4-P <i>mg/L</i>	Rain day of <i>inches</i>	Rain day before <i>inches</i>
11/2/2006	9:50 AM	260	6.76			1.69	0.01
11/3/2006	10:00 AM	270	65.90			0.01	1.69
11/4/2006	10:00 AM	260	33.60			0.01	0.01
11/7/2006	10:00 AM	270	2.64	0.054	0.017	0.02	0.01
11/13/2006	9:30 AM	280	8.21	0.118	0.025	1.49	0.02
11/15/2006	12:00 PM		13.80			0.01	0.00
11/21/2006	1:15 PM		3.36			0.04	0.00
11/28/2006	11:00 AM		13.90			0.01	0.02
12/5/2006		280	2.58			0.00	0.00
12/10/2006	1:05 PM	210	61.60	1.126	0.026	0.33	0.76
12/12/2006	12:00 PM	160	103.00	2.226	0.024	0.28	0.94
12/15/2006	9:35 AM	210	44.60			0.02	0.24
12/22/2006				1.881	0.028	0.00	0.99
1/2/2007	11:00 AM	210	9.54	1.641	0.020	0.01	0.01
1/4/2007	9:45 AM	160	63.60	1.223	0.051	0.04	0.59
1/9/2007	7:30 AM	220	8.58	1.144	0.018	0.01	0.01
1/17/2007				0.950	0.000	0.01	0.05
1/24/2007	10:30 AM	270	4.72			0.00	0.01
2/1/2007	10:45 AM	260	4.25			0.00	0.01
2/7/2007	10:30 AM	250	3.26	0.075	0.000	0.43	0.03
2/8/2007	9:00 AM	190	51.40			1.10	0.43
2/9/2007	10:50 AM	100	257.00	0.590	0.063	1.11	1.10
2/10/2007	11:30 AM	90	228.00			0.70	1.11
2/13/2007	10:30 AM	130	54.00	0.685	0.034	0.00	0.58
2/22/2007	8:50 AM	120	201.00	0.418	0.079	0.67	0.09
2/27/2007	9:30 AM	150	41.60	0.537	0.061	0.34	0.38
3/7/2007	10:00 AM	200	10.40	0.412	0.000	0.02	0.00
3/22/2007	10:24 AM	220	5.33	0.133	0.039	0.00	0.01
mean		207	50	1	0	0	0
median		210	13.85	0.638	0.026	0.02	0.025
min		90	2.58	0.054	0	0	0
max		280	257	2.226	0.079	1.69	1.69
n		23	26	16	16	28	28

Turbidity, Salmon Creek at Bodega Hwy, Bodega



Nutrients, Salmon Creek at Bodega Hwy, Bodega



Rainfall data: Weather Underground www.wunderground.com
 Valley Ford Freestone Rd, Freestone, CA Station Hardware: Vantage Pro
 Lat: N 38 ° 20 ' 13 " (38.337 °) Lon: W 122 ° 56 ' 49 " (-122.947 °) Elevation: 100

WATER QUALITY OBJECTIVES: Specific water quality objectives are not available for Salmon Creek. State Water Resources Control Board Basin Plan Water Quality Objectives for the Russian River or USEPA standards are substituted.

Applicable Water Quality Objectives		
Turbidity	25 NTU*	John W Sigler, 1984. "The Effects of Chronic Turbidity on Density and Growth of Steelheads and Coho Salmon", used in the 2006 303-d list.
Conductivity	390 uS**	SWRCB Basin Plan for lower Russian River mainstem
Nitrate-nitrogen (NO3-N)	1.0 mg/L	USEPA recommendation for streams
Phosphorus (PO4-P)	0.1 mg/L	SWRCB Basin Plan and USEPA recommendation for streams

* Turbidity is difficult to put a strict limit on. The Basin Plan Objectives states that turbidity should not raise in the water body more than 20% above background levels.

** Conductivity is a secondary parameter, its levels do not directly affect health, it serves as an indicator

DISCUSSION: Due to sampling frequency and timing, peak turbidity and nutrients were not necessarily captured. 12 out of 26 turbidity samples were over 25 NTU, and 4 samples out of 26 were over 100 NTU. 6 out of 16 samples were greater than 1.0 mg/L nitrogen. Phosphorous remained under the 0.1 mg/L objective for all samples. Turbidity clearly fluctuates with rain events, though more intense study is necessary to determine where on the hydrograph turbidity rises and falls. Nitrate also appears to spike with rain events. From this data it seems that nitrogen remains elevated for some days after a rain, but more frequent sampling is necessary to confirm this.

Nitrogen and turbidity may be a problem in this area of Salmon Creek. The background levels appear to be within normal range, but stormwater is washing pollutants into the creek.

Nutrient analysis note: The instrument is calibrated from 0.02 mg/L to 1.0 mg/L for nitrogen and 0.5 mg/L for phosphorous. While it can detect well outside of these ranges, and the calibration curve is linear, samples running higher than 1.0 mg/L were diluted and retested to within the calibrated range.



Sampling site during high flows in January 2007