Water Quality Report Card for

City of Capitola

2012 Urban Watch Results

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Introduction

The 2012 Capitola Urban Watch monitoring program was conducted by the Coastal Watershed Council (CWC) for the City of Capitola as part of their National Pollutant Discharge Elimination System (NPDES) Phase II Storm Water Management Program.

The goal of the Urban Watch Program is twofold: First, to serve as a tool for education and outreach to the community regarding the impacts that citizens have on local water quality through urban runoff; and secondly, to collect scientifically valid water quality data to support environmental management decisions at the local and state levels.

The dry-season monitoring program included fifteen water quality monitoring events from June through the end of September. During each event, CWC staff led trained teams of volunteers to record field observations and measurements. In addition, samples were collected on a monthly basis to measure nutrients and bacteria indicators.

This report card shows the results for samples collected at seven sites in the City of Capitola: three Soquel Creek stream sites and four storm drains (two of which are on Noble Gulch Creek and flow through culverts). CWC and staff from the Public Works Department at the City of Capitola chose the stream and outflow/storm drain sites based on drainage basin characteristics and safe access for volunteer monitoring teams. Sites were also chosen to represent the upper, middle and lower reaches of Soquel Creek and its tributaries within the boundaries of the City of Capitola.

CWC teams follow scientific protocols to ensure that our data are reliable and can be compared to water quality objectives. Water quality objectives, or "WQO" is a term regulators use to determine if a water body supports safe human uses, such as swimming, drinking, or irrigating. When the WQO is exceeded, the water is not considered safe for various "beneficial" uses, such as those listed above.

CWC encourages everyone to learn more about water quality in the river or creek nearest your home. More information and the full set of historical data are available on the CWC Data and Stewardship Portal website http://coastal-watershed.org/stewardship/stewardship-portal/

Table 1 provides site ID, name, description, and latitude/longitude information for all sites.

Table 1: 2012 City of Capitola Urban Watch sites

Site ID	Site name	Site Description	LAT	LONG
304-CSD-06	Creekside	From Porter Street (Bay Street turns into Porter after HWY 1) turn left at the stop light into Creekside Plaza. Park at the very end of the parking lot, close to the freeway overpass. There will be a trail that leads to the creek. Before reaching the freeway overpass, the storm drain will be to your right, on the hill.	36.9834	-121.9588
304-CSD-08	Noble Gulch @ Monterey Avenue	At Noble Gulch Park on Monterey Ave	36.9770	-121.9500
304-CSD-09	Capitola Pier	Under the Capitola Pier	36.9713	-121.9538
304-CSD-10	Noble Gulch Upstream	(Directions from the North) From Bay Street, pass Capitola Avenue and proceed down Monterey Avenue. Pass New Brighton Middle Scool and turn left on Kennedy Drive. Park the at the City of Capitola Maintenance Yard. Walk right out of the parking lot along the road and go down the hill to the downstream side of the culvert.	36.9933	-121.9447
304-SOQUE-22	Lagoon Outlet	At mouth of Soquel Creek	36.9726	-121.9520
304-SOQUE-26	Soquel Creek - Uppper	At Creekside Plaza	36.9835	-121.9590
304-SOQUE-28	Soquel Creek - Mid	Behind Nob Hill on Bay Avenue	36.9804	-121.9578

Methods

Training

The Urban Watch Program started regionally in 1997 as a joint effort between CWC, the City of Monterey, and the Monterey Bay National Marine Sanctuary. Since 2000, the City of Capitola Urban Watch Program has trained citizen volunteers to collect water samples and conduct water quality assessments, following established state and federal protocols.

All CWC trainings for water quality monitoring focus on imparting knowledge and skills to volunteer teams that are required to follow quality assurance protocols consistent with USEPA and State Water Resources Control Board procedures. CWC's trainings always stress the importance of volunteer safety above all other considerations.

Volunteers received hands-on, in-the-field trainings for basic field water quality tests including measurements of temperature, pH, dissolved oxygen, electrical conductivity, salinity, total dissolved solids (TDS), chlorine, detergent and turbidity. They were also taught how to properly collect and preserve water samples using appropriate containers while wearing nitrile gloves. Water samples were collected for laboratory analysis of nutrients (nitrate and orthophosphate), bacteria (Escherichia coli and total coliform) and copper.

Monitoring Protocols

At each site the following field measurements were recorded: air and water temperature, specific conductivity, pH, dissolved oxygen (creek sites only), salinity and TDS. Samples were

collected at each site and tested for presence of chlorine, color and turbidity; and presence of detergent at the storm drain sites during every other monitoring event. In addition, field observations were recorded during each event, including presence of trash, smell or sight of sewage, oil sheen and scum, and other notable observations of changes to the environment near the monitoring site, including signs of recent ”pollution” activities or sources, wildlife observations, and any other conditions which could affect water quality.

On a monthly basis, samples were collected at each site for laboratory analysis of nutrients (ammonia, nitrate, and orthophosphate) and bacteria indicators (*E.coli* and total coliform). Copper was analyzed during one monthly monitoring event. Tables 2 and 3 provide raw data on field and laboratory constituents for each site.

Field equipment included a YSI 556 multi-meter, which was used to measure temperature, pH, electrical conductivity, salinity, TDS and dissolved oxygen (both total mg/L and as a percentage of saturation). CWC also utilized a portable field monitoring kit to test for the presence of chlorine, detergent, odor and color.

All collected water samples were analyzed as individual grab samples rather than as a composite of samples.

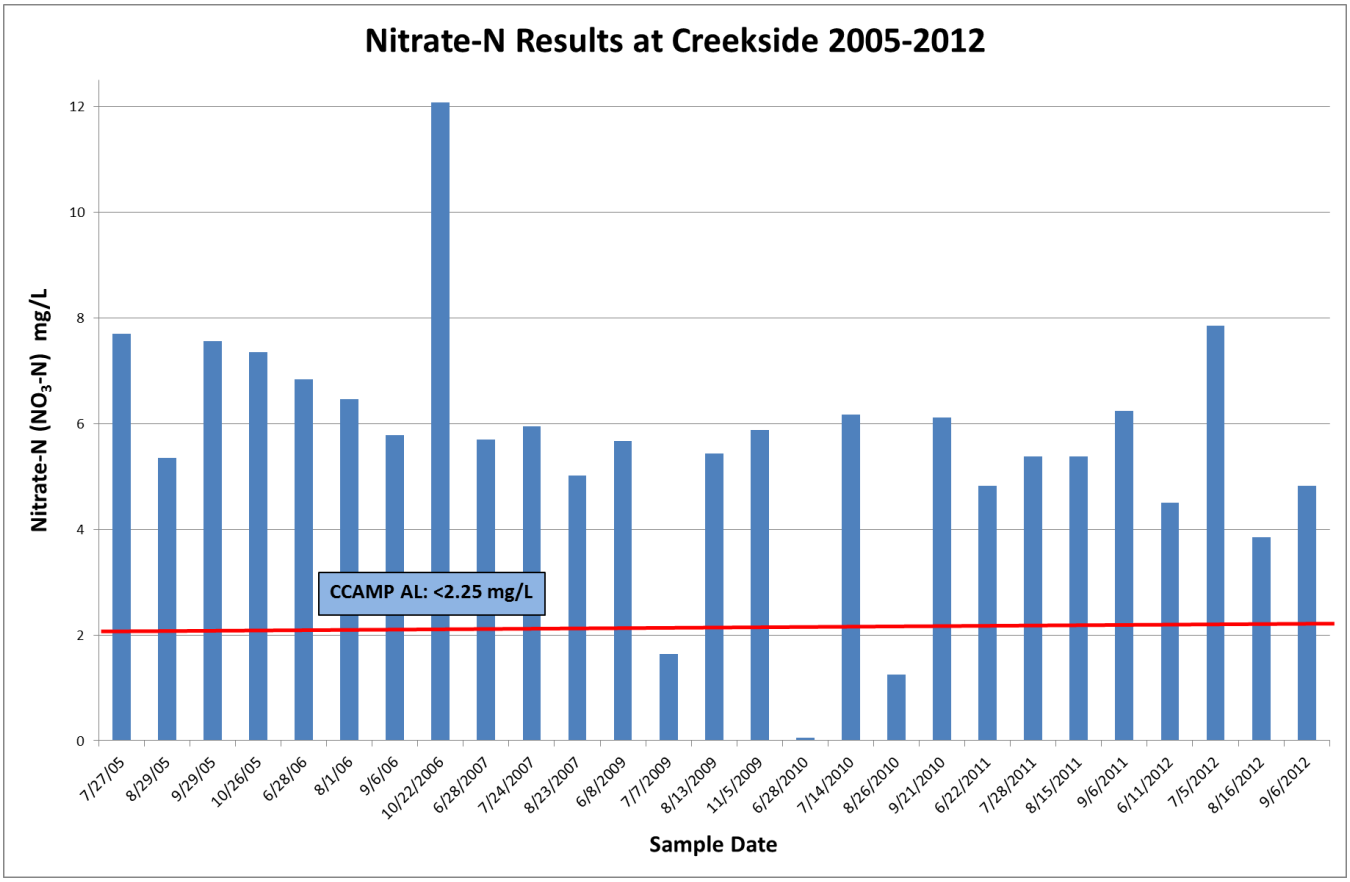
Data Analysis

Nitrate, orthophosphate and ammonia results were compared to the Central Coast Ambient Monitoring Program’s (CCAMP) attention levels or evaluation guidelines. *E.coli* and total coliform results were compared to Water Quality Objectives (WQOs) in the Central Coast Regional Water Quality Control Board’s Basin Plan.

While it is essential to note that WQOs apply only to receiving waters (such as named creeks, rivers, and the Bay), and not to urban runoff discharges, comparisons of urban runoff monitoring results to WQOs provide a frame of reference by which results can be evaluated. Absent other objective standards to use as a comparison, these WQOs are the most appropriate values to compare to environmental results.

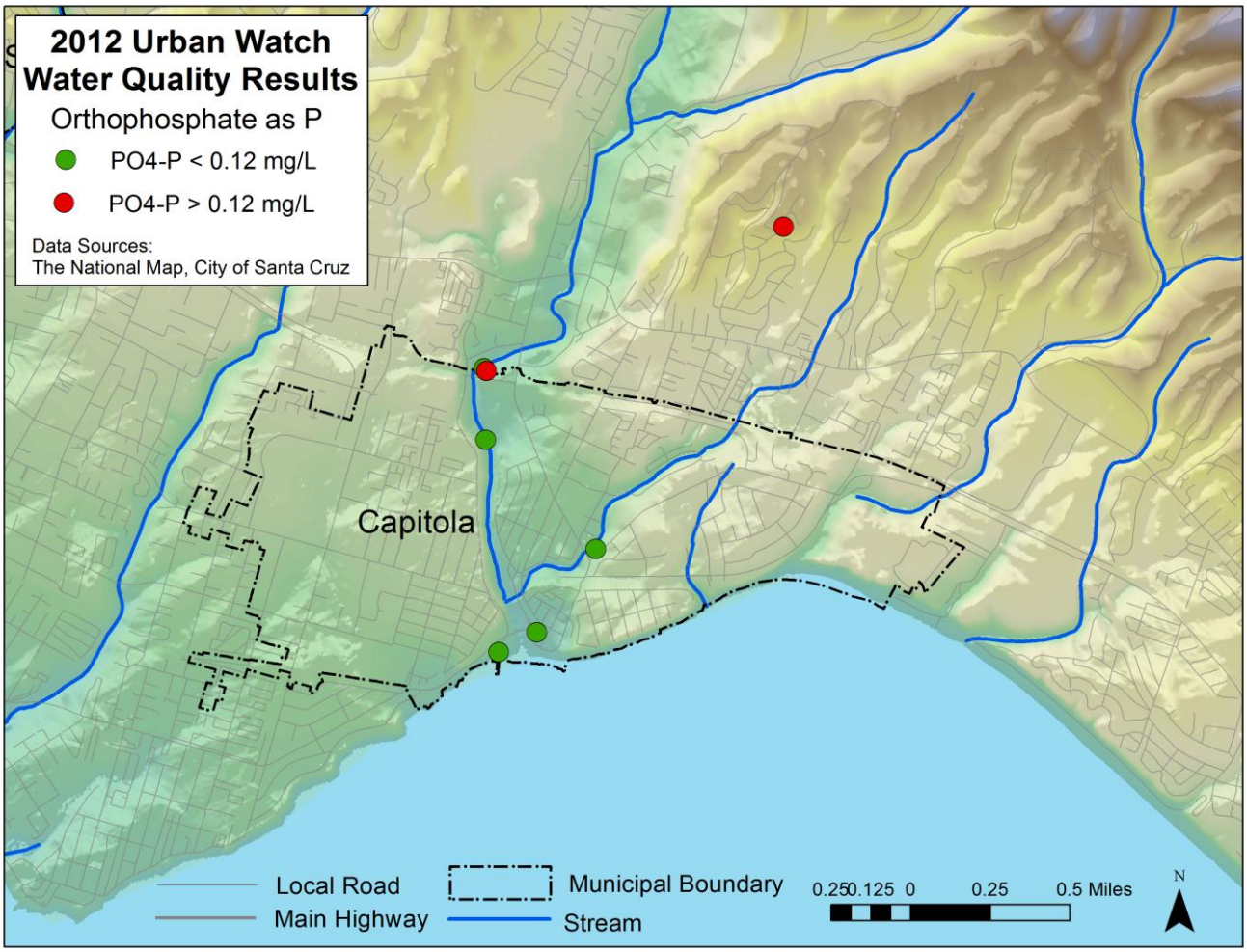
Results

The following report cards are designed toward public education and awareness and to engage residents in best management practices in our local watersheds. The full Urban Watch report card can be viewed online at: http://coastal-watershed.org/cwc-reports/



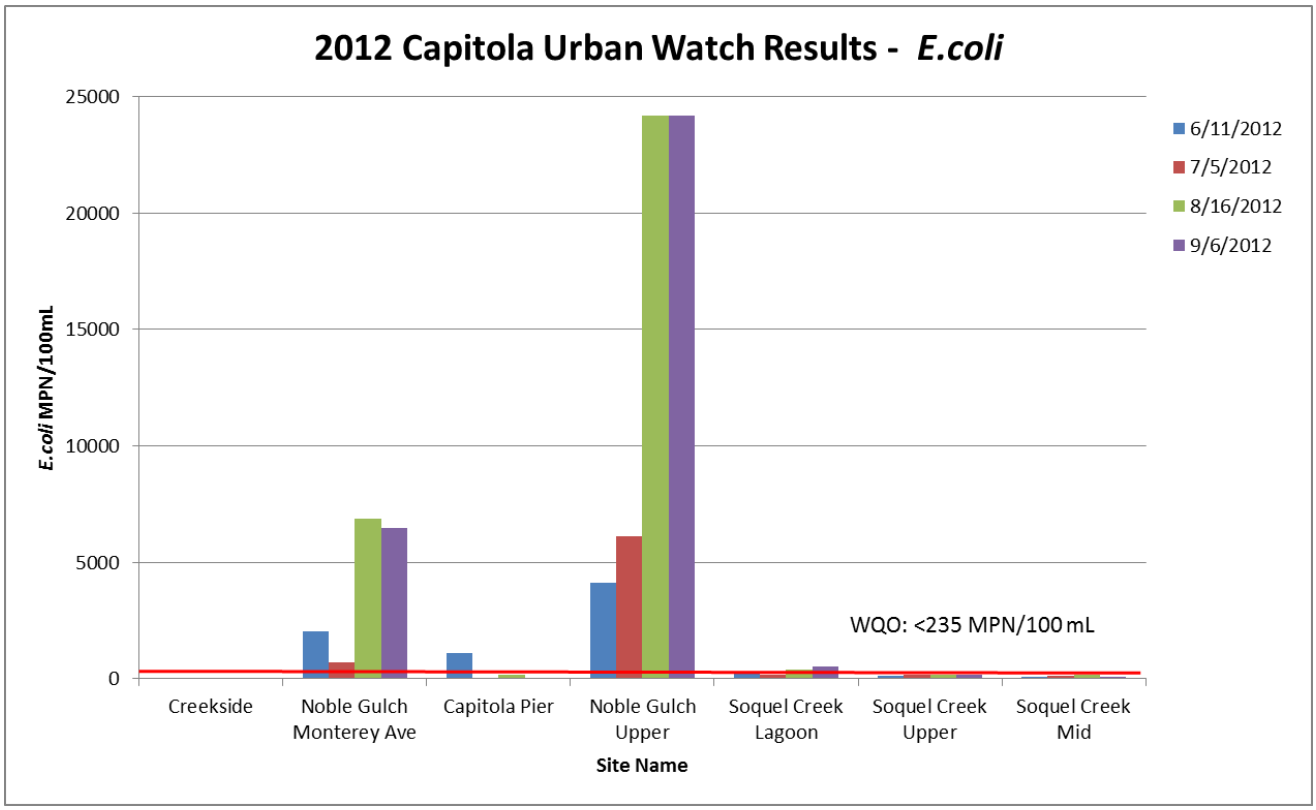
About Nitrate:

- **Historically, 89% (24 of 27) of Creekside samples between 2005-2012 exceeded the CCAMP attention level**
- **Nitrate is necessary for healthy plant growth, but too much can lead to algal blooms that deplete oxygen in water**
- **Sources: runoff containing fertilizers, animal waste, wash water, industrial waste or sewage, or excess dumping of vegetative material**
- **What you can do: limit the use of chemical fertilizers; wash pets & cars where water won't run into a storm drain (use the lawn); place cut/dead vegetation in yard waste can or compost it. Learn more at: http://coastal-watershed.org/stewardship/**



About Orthophosphate:

- **89% (25 of 28) of sites met the CCAMP attention level; 11% (3 of 28) exceeded the attention level**
- **Orthophosphate is a necessary nutrient for aquatic plants, but excess amounts can cause algal blooms, oxygen depletion, and death of fish, invertebrates & other aquatic species.**
- **Sources: runoff from fertilized lawns, field, or animal manure storage areas; wastewater treatment plants; failing septic systems; commercial cleaning products**
- **What you can do: maintain septic systems; limit the use of chemical fertilizers (especially before a rain). Learn more at: http://coastal-watershed.org/stewardship/**



About *E.coli*:

- **Historically, highest *E.*coli results are from Noble Gulch at Monterey Avenue (2007-2012) and Upper (2010-2012)**
- ***E.coli* is a type of bacterium found naturally in the intestines of animals & humans; it is an indicator of fecal pollution in water**
- **Sources: leaky sewer pipes, failing septic systems, pets, and wildlife (esp. birds)**
- **What you can do: maintain septic systems, clean up after pets, and report leaking sewer lines. Learn more at: http://coastal-watershed.org/stewardship/**

Table 2 provides the summary of field results for each parameter at each site. Results that exceed the applicable attention level or WQO are shaded in order to highlight these results. Not all tests were performed during every monitoring event (detergent tests were every other event, no water at Pier on 7/31) and are listed as "NA" when the test was not performed.

Table 2: Field Results

CSD-06: Creekside Storm Drain

Date	Air Temperature	Water Temperature	Specific Conductivity	TDS	Salinity	pH	Turbidity	Flow Depth	Wetted Width	Trash	Sewage	Oil Sheen	Scum	Detergent	Chlorine	Odor	Color
	°C	°C	uS/cm	g/L	ppt		FTU	cm	cm	T/F	T/F	T/F	T/F	ppm	ppm	T/F	BCS#
6/5/2012	16.5	13.9	643	0.418	0.32	8.19	0.31	0.4	16.5	T	F	F	F	<0.1	<0.2	F	93
6/11/2012	17.0	14.3	513	0.419	0.32	8.14	0.19	0.4	14.4	F	F	F	F	NA	<0.2	F	93
6/26/2012	10.7	14.4	658	0.428	0.32	7.94	1.09	0.4	18.0	F	F	F	F	<0.1	<0.2	F	93
7/5/2012	16.0	15.4	675	0.438	0.33	8.22	0.18	0.3	7.0	T	F	F	F	NA	<0.2	F	93
7/14/2012	16.0	15.5	683	0.444	0.33	7.96	0.29	0.4	9.5	F	F	F	F	<0.1	<0.2	F	93
7/19/2012	21.0	15.6	694	0.451	0.34	8.23	0.4	0.4	17.2	F	F	F	F	NA	<0.2	F	93
7/31/2012	13.0	15.1	685	0.445	0.34	7.86	0.25	0.2	8.5	F	F	F	F	<0.1	<0.2	F	93
8/6/2012	15.0	15.3	669	0.435	0.33	8.12	0.2	0.5	10.5	F	F	F	F	NA	<0.2	F	93
8/16/2012	21.0	16.0	681	0.442	0.33	8.24	0.89	0.4	12.5	F	F	F	F	<0.1	<0.2	F	93
8/25/2012	14.5	15.6	684	0.445	0.34	7.68	0.23	0.3	9.5	F	F	F	F	NA	<0.2	F	93
8/29/2012	16.0	15.4	707	0.46	0.35	7.71	0.18	0.3	8.5	F	F	F	F	<0.1	<0.2	F	93
9/6/2012	14.0	15.6	701	0.455	0.34	8.00	0.19	0.3	15.0	F	F	F	F	NA	<0.2	F	93
9/14/2012	14.0	15.8	688	0.447	0.34	7.52	0.27	0.1	22.0	F	F	F	F	<0.1	<0.2	F	93
9/19/2012	13.5	14.7	690	0.448	0.34	8.06	0.25	0.3	8.5	F	F	F	F	NA	<0.2	F	93
9/24/2012	13.5	14.8	632	0.411	0.31	8.19	1.04	0.3	13.0	F	F	F	F	<0.1	<0.2	F	107

CSD-08: Noble Gulch at Monterey Avenue

Date	Air Temperature	Water Temperature	Specific Conductivity	TDS	Salinity	Dissolved Oxygen	pH	Turbidity	Flow Depth	Wetted Width	Trash	Sewage	Oil Sheen	Scum	Detergent	Chlorine	Odor	Color
	°C	°C	uS/cm	g/L	ppt	mg/L		FTU	cm	cm	T/F	T/F	T/F	T/F	ppm	ppm	T/F	BCS#
6/5/2012	14.7	13.5	523	0.340	0.25	6.98	7.17	10.70	0.1	53.9	F	F	T	F	<0.6	<0.2	F	96
6/11/2012	18.0	14.5	484	0.314	0.23	8.26	7.42	6.12	2.1	52.5	T	F	F	F	<0.2	<0.2	F	93
6/26/2012	19.0	15.0	475	0.309	0.23	8.87	7.62	9.40	2.2	53.0	F	F	F	F	<0.2	<0.2	F	93
7/5/2012	19.0	16.4	727	0.473	0.36	8.74	7.81	5.10	1.4	36.0	F	T	F	F	NA	<0.2	F	93
7/14/2012	17.5	18.2	702	0.456	0.34	10.66	7.96	5.34	1.0	21.0	T	F	F	F	<0.1	<0.2	F	93
7/19/2012	18.3	15.0	447	0.290	0.22	8.29	7.47	5.50	1.0	41.8	T	F	T	F	NA	<0.2	F	93
7/31/2012	15.5	15.0	637	0.414	0.31	8.44	7.62	6.19	1.3	51.0	F	F	T	F	<0.1	<0.2	F	104
8/6/2012	14.0	14.3	672	0.437	0.33	8.71	7.38	6.78	1.5	19.5	T	F	F	F	NA	<0.2	F	93
8/16/2012	20.0	18.2	636	0.413	0.31	8.65	7.71	7.20	1.1	19.0	F	T	F	F	<0.2	<0.2	F	91
8/25/2012	17.5	15.8	499	0.324	0.24	9.43	7.65	5.97	1.3	34.4	F	T	F	F	NA	<0.2	F	93
8/29/2012	15.5	14.3	441	0.286	0.21	8.62	7.58	5.80	1.1	51.0	F	F	F	F	<0.1	<0.2	F	93
9/6/2012	15.0	14.6	670	0.435	0.33	8.05	7.39	5.65	1.0	39.0	F	F	F	F	NA	<0.2	F	93
9/14/2012	17.0	15.4	653	0.424	0.32	8.81	7.66	5.11	1.6	42.0	F	F	F	F	<0.1	<0.2	F	93
9/19/2012	11.1	12.4	649	0.422	0.32	9.03	6.92	5.29	1.6	43.0	F	F	T	F	NA	<0.2	F	93
9/24/2012	16.0	14.6	593	0.385	0.29	9.33	7.69	7.55	1.2	39.0	F	F	F	F	<0.1	<0.2	F	91

CSD-09: Capitola Pier Storm Drain

Date	Air Temperature	Water Temperature	Specific Conductivity	TDS	Salinity	pH	Turbidity	Flow Depth	Wetted Width	Trash	Sewage	Oil Sheen	Scum	Detergent	Chlorine	Odor	Color
	°C	°C	uS/cm	g/L	ppt		FTU	cm	cm	T/F	T/F	T/F	T/F	ppm	ppm	T/F	BCS#
6/5/2012	NA	17.7	475	0.309	0.23	8.07	2.49	0.3	21.3	T	F	F	F	<0.1	<0.2	F	93
6/11/2012	17.0	18.1	479	0.311	0.23	8.09	0.97	0.3	12.0	T	F	F	F	NA	<0.2	F	93
6/26/2012	15.5	19.5	488	0.317	0.24	8.41	3.48	0.4	9.5	T	F	T	F	<0.2	<0.2	F	93
7/5/2012	16.5	18.2	507	0.330	0.25	8.08	0.91	0.5	12.0	T	F	F	T	NA	<0.2	F	93
7/14/2012	16.0	18.3	498	0.324	0.24	7.53	1.00	0.3	12.0	T	F	F	F	<0.1	<0.2	F	93
7/19/2012	18.5	19.4	522	0.339	0.25	8.22	0.78	0.2	4.0	T	F	F	F	NA	<0.2	F	93
7/31/2012	13.5	NA	NA	NA	NA	NA	9.80	NA	NA	T	F	F	F	<0.3	<0.2	F	91
8/6/2012	13.0	17.1	526	0.342	0.26	8.10	1.92	0.2	5.5	T	F	F	F	NA	<0.2	F	91
8/16/2012	15.0	20.0	520	0.338	0.25	7.70	0.83	0.2	6.0	T	F	F	F	<0.1	<0.2	F	91
8/25/2012	14.5	18.1	531	0.345	0.26	7.99	1.11	0.4	10.5	T	F	F	F	NA	<0.2	F	93
8/29/2012	17.5	18.8	585	0.380	0.28	6.80	11.30	0.1	6.5	F	F	F	F	<0.1	<0.2	F	91
9/6/2012	14.0	17.7	554	0.360	0.27	7.93	1.49	0.1	7.0	F	F	F	F	NA	<0.2	F	93
9/14/2012	14.0	16.6	548	0.356	0.27	7.81	2.34	0.2	10.0	T	F	F	F	<0.1	<0.2	F	93
9/19/2012	14.5	17.4	530	0.344	0.26	8.05	2.06	0.1	4.0	T	F	F	F	NA	<0.2	F	91
9/24/2012	13.0	15.2	508	0.330	0.25	7.23	3.74	0.1	9.7	T	F	F	F	<0.1	<0.2	F	91

CSD-10: Noble Gulch Upper

Date	Air Temperature	Water Temperature	Specific Conductivity	TDS	Salinity	Dissolved Oxygen	pH	Turbidity	Flow Depth	Wetted Width	Trash	Sewage	Oil Sheen	Scum	Detergent	Chlorine	Odor	Color
	°C	°C	uS/cm	g/L	ppt	mg/L		FTU	cm	cm	T/F	T/F	T/F	T/F	ppm	ppm	T/F	BCS#
6/5/2012	13.5	12.5	885	0.575	0.44	8.93	7.47	6.72	0.4	170.7	T	F	T	T	<0.1	<0.2	F	91
6/11/2012	NA	14.0	956	0.621	0.32	9.59	7.88	3.02	0.3	182.9	F	F	T	T	NA	<0.2	F	93
6/26/2012	18.5	13.6	957	0.622	0.48	9.75	7.84	11.80	0.2	182.9	T	F	T	T	<0.1	<0.2	F	91
7/5/2012	17	14.6	979	0.636	0.49	8.92	7.84	3.00	0.4	170.0	F	T	T	T	NA	<0.2	F	93
7/14/2012	18	14.6	771	0.501	0.38	9.71	7.98	7.67	0.5	155.0	F	F	T	T	<0.1	<0.2	F	93
7/19/2012	18.3	14.6	925	0.601	0.46	9.52	7.8	3.03	0.3	170.0	T	F	F	T	NA	<0.2	F	93
7/31/2012	13.5	14.0	917	0.596	0.45	10.01	7.61	3.24	0.5	168.0	F	F	T	F	<0.1	<0.2	F	91
8/6/2012	12.5	13.8	903	0.587	0.45	10.06	6.73	11.70	0.5	167.0	F	T	F	T	NA	<0.2	F	91
8/16/2012	20	15.0	882	0.573	0.44	9.72	7.82	2.76	0.5	175.0	T	F	T	T	<0.1	<0.2	F	91
8/25/2012	15.5	14.4	799	0.52	0.39	9.48	7.76	3.18	1.1	183.0	T	F	T	T	NA	<0.2	F	93
8/29/2012	15	14.2	829	0.539	0.41	9.68	7.66	7.01	0.2	173.0	F	F	F	F	<0.1	<0.2	F	91
9/6/2012	14	14.1	859	0.558	0.42	9.51	7.44	9.97	0.1	166.0	T	F	F	T	NA	<0.2	F	93
9/14/2012	16	14.6	815	0.53	0.4	8.93	7.66	2.81	0.5	168.5	F	F	F	T	<0.1	<0.2	F	93
9/19/2012	11	12.9	892	0.58	0.44	9.85	6.59	3.48	0.4	170.0	T	F	F	F	NA	<0.2	F	91
9/24/2012	14.5	13.6	741	0.482	0.36	9.19	7.76	3.47	0.5	167.7	F	F	T	T	<0.1	<0.2	F	107

SOQUE-22: Soquel Creek Lagoon

Date	Air Temperature	Water Temperature	Specific Conductivity	TDS	Salinity	Dissolved Oxygen	pH	Turbidity	Flow depth	Wetted Width	Trash	Sewage	Oil Sheen	Scum	Chlorine	Odor	Color
	°C	°C	uS/cm	g/L	ppt	mg/L		FTU	cm	cm	T/F	T/F	T/F	T/F	ppm	T/F	BCS#
6/5/2012	17.0	17.7	648	0.421	0.32	7.7	7.83	6.38	NA	NA	F	F	F	T	<0.2	F	91
6/11/2012	21.0	17.2	727	0.473	0.36	9.2	8.06	1.07	NA	NA	T	F	F	T	<0.2	F	93
6/26/2012	18.0	17.6	756	0.492	0.37	9.8	8.25	0.87	NA	NA	T	F	F	T	<0.2	F	93
7/5/2012	23.0	18.8	784	0.510	0.39	9.9	8.08	1.07	NA	NA	F	F	F	F	<0.2	F	93
7/14/2012	16.0	18.6	667	0.433	0.33	9.9	7.63	0.89	NA	NA	T	F	F	F	<0.2	F	93
7/19/2012	21.0	19.2	802	0.521	0.39	10.4	8.25	NA	NA	NA	T	F	F	F	<0.2	F	93
7/31/2012	13.5	18.8	814	0.529	0.40	9.1	7.98	1.55	NA	NA	T	T	F	F	<0.2	F	92
8/6/2012	16.0	17.9	646	0.420	0.32	9.3	7.99	0.98	NA	NA	F	F	F	F	<0.2	F	93
8/16/2012	17.5	19.9	689	0.448	0.34	10.0	8.00	1.02	NA	NA	F	F	F	F	<0.2	F	93
8/25/2012	16.0	18.5	822	0.534	0.40	9.2	7.99	0.86	NA	NA	F	F	F	F	<0.2	F	93
8/29/2012	16.0	19.1	797	0.518	0.39	11.2	7.93	1.45	NA	NA	F	F	F	F	<0.2	F	93
9/6/2012	16.0	18.3	816	0.531	0.40	9.7	7.53	0.80	NA	NA	F	F	F	F	<0.2	F	93
9/14/2012	15.5	18.6	805	0.523	0.40	9.8	7.76	0.86	NA	NA	T	F	F	F	<0.2	F	93
9/19/2012	17.0	17.3	806	0.524	0.40	9.8	7.83	0.92	NA	NA	T	F	F	F	<0.2	F	93
9/24/2012	14.0	17.7	702	0.457	0.34	10.0	7.97	1.43	NA	NA	F	F	F	F	<0.2	F	91

SOQUE-26: Soquel Creek Upper

Date	Air Temperature	Water Temperature	Specific Conductivity	TDS	Salinity	Dissolved Oxygen	pH	Turbidity	Flow depth	Wetted Width	Trash	Sewage	Oil Sheen	Scum	Chlorine	Odor	Color
	°C	°C	uS/cm	g/L	ppt	mg/L		FTU	cm	cm	T/F	T/F	T/F	T/F	ppm	T/F	BCS#
6/5/2012	16.5	13.8	694	0.451	0.34	10.58	8.21	2.03	39.0	1170.4	T	F	F	F	<0.2	F	93
6/11/2012	18.0	14.9	700	0.455	0.34	9.91	8.12	0.59	38.5	1200.9	F	F	F	T	<0.2	F	93
6/26/2012	10.7	14.4	680	0.442	0.33	9.74	8.10	0.66	39.9	1207.0	T	F	F	F	<0.2	F	93
7/5/2012	16.0	16.4	765	0.497	0.38	9.73	8.01	0.73	39.0	1205.0	F	F	F	F	<0.2	F	93
7/14/2012	16.0	16.4	779	0.506	0.38	10.56	8.07	0.65	36.0	1212.0	F	F	F	F	<0.2	F	93
7/19/2012	21.0	17.0	795	0.517	0.39	9.55	8.18	0.68	36.0	1296.0	T	F	F	F	<0.2	F	93
7/31/2012	13.0	15.5	516	0.335	0.25	9.12	7.66	1.22	37.0	1266.0	F	F	F	F	<0.2	F	93
8/6/2012	15.0	15.1	402	0.261	0.19	9.81	7.89	0.75	39.0	1230.0	F	T	F	F	<0.2	F	93
8/16/2012	21.0	17.7	776	0.504	0.38	10.00	8.19	0.85	37.0	1205.0	F	F	F	F	<0.2	F	91
8/25/2012	14.5	15.6	793	0.515	0.39	9.36	7.69	0.63	39.4	1150.0	F	F	F	F	<0.2	F	93
8/29/2012	16.0	15.9	781	0.508	0.38	8.89	7.66	1.17	36.0	1226.0	F	F	F	F	<0.2	F	93
9/6/2012	14.0	15.2	784	0.509	0.39	8.81	7.68	0.51	35.5	1195.0	F	F	F	F	<0.2	F	93
9/14/2012	14.0	15.7	766	0.498	0.38	8.17	7.19	0.73	37.0	1220.0	F	F	F	F	<0.2	F	93
9/19/2012	13.5	13.8	791	0.514	0.39	8.72	7.66	0.77	36.2	1209.0	F	F	F	F	<0.2	F	97
9/24/2012	13.5	14.3	655	0.426	0.32	8.67	7.79	1.20	31.8	1197.9	F	F	F	F	<0.2	F	92

SOQUE-28: Soquel Creek Mid

Date	Air Temperature	Water Temperature	Specific Conductivity	TDS	Salinity	Dissolved Oxygen	pH	Turbidity	Flow depth	Wetted Width	Trash	Sewage	Oil Sheen	Scum	Chlorine	Odor	Color
	°C	°C	uS/cm	g/L	ppt	mg/L		FTU	cm	cm	T/F	T/F	T/F	T/F	ppm	T/F	BCS#
6/5/2012	17.5	14.3	591	0.384	0.29	10.54	8.20	0.99	39.0	1249.7	F	F	F	F	<0.2	F	93
6/11/2012	16.9	14.9	711	0.462	0.35	9.75	8.00	0.58	35.0	643.1	F	F	F	T	<0.2	F	NA
6/26/2012	16.5	14.7	730	0.474	0.36	9.77	8.18	0.61	37.0	655.3	T	F	F	F	<0.2	F	93
7/5/2012	16.0	16.1	765	0.497	0.38	9.19	7.80	0.89	34.0	610.0	T	F	F	F	<0.2	F	93
7/14/2012	17.0	16.4	545	0.354	0.27	10.2	8.15	0.65	29.5	613.0	F	T	T	T	<0.2	F	93
7/19/2012	22.0	17.3	427	0.278	0.21	9.63	8.16	0.59	36.2	604.0	F	F	F	T	<0.2	F	93
7/31/2012	14.0	15.7	249	0.162	0.12	8.88	7.94	1.09	26.0	603.0	F	F	F	F	<0.2	F	93
8/6/2012	17.0	15.6	773	0.502	0.38	9.62	8.07	0.73	34.5	606.0	F	F	F	F	<0.2	F	93
8/16/2012	20.0	17.5	494	0.321	0.24	9.45	8.04	0.46	31.5	605.0	T	F	F	F	<0.2	F	91
8/25/2012	14.0	15.7	528	0.343	0.26	9.36	7.04	0.63	30.5	637.0	T	T	F	F	<0.2	F	93
8/29/2012	16.0	16.4	800	0.520	0.39	8.53	7.81	0.71	25.5	576.0	F	F	F	F	<0.2	F	93
9/6/2012	16.0	15.6	787	0.511	0.39	8.74	7.85	0.48	29.5	593.0	F	F	F	F	<0.2	F	93
9/14/2012	15.0	15.9	780	0.507	0.38	7.96	7.36	0.73	28.0	557.0	F	F	F	F	<0.2	F	93
9/19/2012	14.0	14.0	423	0.275	0.20	8.46	7.54	0.50	28.8	585.0	F	F	F	F	<0.2	F	91
9/24/2012	14.5	14.5	798	0.519	0.39	8.49	7.91	1.08	29.0	595.0	F	F	T	F	<0.2	F	97

Table 3 provides a summary of laboratory results for each constituent at each site. Results that exceed the applicable attention level or WQO are shaded in order to highlight these results.

Table 3: Laboratory Results

Constituent	WQO or Attention Level	Site Name	Creekside	Monterey Ave.	Pier	Noble Gulch	Lagoon Outlet	Soquel Creek Upper	Soquel Creek Mid
		Site ID	CSD-06	CSD-08	CSD-09	CSD-10	SOQUE-22	SOQUE-26	SOQUE-28
		Type	SD	SD	SD	SD	Stream	Stream	Stream
		Date							
Nitrate (NO_3-N)	<2.25 ppm	6/11/2012	4.5	0.865	1.115	0.313	ND	ND	ND
		7/5/2012	7.86	0.431	0.85	0.225	ND	ND	ND
		8/16/2012	3.856	0.811	0.946	0.613	ND	ND	ND
		9/6/2012	4.82	1.082	0.487	0.367	ND	ND	ND
Orthophosphate (PO_4-P)	<0.12 ppm	6/11/2012	0.146	ND	ND	ND	ND	ND	ND
		7/5/2012	ND	ND	ND	ND	ND	ND	ND
		8/16/2012	0.763	ND	ND	1.356	ND	ND	ND
		9/6/2012	ND	ND	ND	ND	ND	ND	ND
Ammonia (NH_3)	<0.025 ppm	6/11/2012	ND	ND	ND	ND	ND	ND	ND
		7/5/2012	ND	ND	ND	ND	ND	ND	ND
		8/16/2012	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
		9/6/2012	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
E.coli	<235 MPN 100 m/L	6/11/2012	<5	2046	1112	4106	298	107	98
		7/5/2012	10	695	<5	6131	173	189	145
		8/16/2012	<5	6867	<171	>24196	399	161	146
		9/6/2012	<5	6488	<5	>24196	504	146	85
Total Coliform	<10,000 MPN 100 m/L	6/11/2012	2359	15531	2909	12997	2755	1374	1726
		7/5/2012	1529	24196	10462	24196	1789	1793	1187
		8/16/2012	<5	19863	>24196	>24196	1664	703	1354
		9/6/2012	<6488	14136	>24196	>24196	4884	1597	1043
Copper (Cu)	<30.0 µg/L	6/11/2012	1.7	1.8	2.4	0.61	0.85	0.63	0.68

Shading indicates results above WQO

ND = Non-detect result

J = reflects estimated analytical result value detected below the Reporting Limit (RL) and above the Method Detection Limit (MDL)

Discussion/Conclusions

This report summarizes results for the 2012 City of Capitola Urban Watch Program. Non-compliance with WQOs or attention levels was documented for nutrients (nitrate, orthophosphate and ammonia) and bacteria (*E.coli* and total coliform) at seven sites on four dates.

For nutrients, nitrate levels were relatively low at all sites with the exception of the Creekside (CSD-06) site, where exceedances occurred during all four laboratory events and levels ranged from 4.5 to 7.86 mg/L NO_3-N. Historically, results at the Creekside site have exceeded the CCAMP attention level in 24 of 27 results (89%) since 2005. In comparison, only one other exceedance has been recorded since 2005 (Capitola Pier on 6/22/11 with a result of 2.36 mg/L).

For orthophosphate 25 of 28 (89%) samples met the CCAMP attention level; exceedance levels ranged from 0.146 to 1.356 mg/L PO_4-P. Ammonia results met the CCAMP attention level in 50% of all samples. Exceedances were on 8/16/12 and 9/6/12 at all sites and all results were <0.3 mg/L.

For pathogens, *E.coli* met the Basin Plan WQO at 57% of sites. Exceedances were found in all samples at Monterey Avenue (CSD-08) and Noble Gulch Upper (CSD-10), in 3 of 4 samples at the Lagoon Outlet (SOQUE-22) and in 1 of 4 samples at Capitola Pier (CSD-09). Historically the highest *E.coli* results are from Noble Gulch at Monterey Avenue (2007-2012) and Upper (2010-2012). Total coliform results met the Basin Plan WQO at 61% of all sites. Exceedances were found in all samples for Monterey Avenue and Noble Gulch Upper and in 3 of 4 samples at Capitola Pier.

Copper was measured in samples taken on 6/11/12. Each sample resulted in a detection of copper, but no results exceeded the Basin Plan WQO of <30.0 μg/L. In 2009 one sample, at the Lagoon Outlet, measured an exceedance of the Basin Plan WQO.

All field measurements for water temperature, salinity, TDS and pH met the Basin Plan WQOs for those parameters. Only four turbidity results and one dissolved oxygen result exceeded the Basin Plan WQO and CCAMP attention level for those parameters. Trash continued to be a fairly regular observation by field teams, with most observances at Capitola Pier, Soquel Creek Lagoon and Noble Gulch Upper. Oil sheen was observed 15% of the time and was likely biological in nature. Detergent was detected at Noble Gulch/Monterey Avenue in 4 of 9 tests and at Capitola Pier in 1 of 8 tests.

Where WQOs are exceeded, a need for additional investigative and/or remedial work is indicated. While the City's pollution reduction efforts are likely preventing even higher levels of pollution, a particular challenge for coastal communities is educating visitors, as opportunities for shaping behavior are limited. As in the past, the City is encouraged to focus on visible signage with educational messages and instructions, and strategic placement of waste bins for these audiences.

Soquel Creek is a key natural asset to the local community, and to the larger region. The City of Capitola is acknowledged for its leadership and efforts in striving to not just reduce but

eliminate non-point source pollution in the Creek. The approach of partnering with other organizations and engaging the community through citizen-based monitoring is an excellent example for other communities to follow.

Key recommendations to improve water quality for the future include:

1) Continue water quality monitoring involving volunteers from the public at the selected stations. Data from continued monitoring offer opportunities to measure improvements or degradation in water quality over time, and volunteer-based monitoring in particular helps to raise public awareness of local water quality issues.
2) Investigate the potential watershed sources of elevated nitrate levels in the Creekside drainage area.
3) Investigate the potential watershed sources of elevated indicator bacteria levels throughout the study area.
4) Continue and expand outreach programs targeting local populations and visitors to the City, such as strategic signage, environmental film and lecture series, efficient utilization of social media networks and new media (e.g., CWC's Stewardship Toolkit and Data & Stewardship Portal), continued implementation of school-based stormwater education programs, and expansion of public participation in existing monitoring programs.
5) Collaborate with other cities and counties in the region to collectively fund monitoring and education efforts related to NPDES permit requirements, achieving efficiency in funding and sharing of success stories and challenges.

CWC will continue to partner with the City in water quality monitoring to engage the public and generate useful data to measure the effectiveness of public education and infrastructure investments. With support from the City of Capitola Public Works Department, CWC has been and will continue to host a series of environmental water tours free to the public.

The volunteers collecting this valuable information play a key role in our community as stewards of our watersheds. The information they provide is used by resource agencies, local governments and community groups to protect and improve the health of our local streams.

CWC hopes that the results in this report and from other monitoring programs will aid in pollution prevention efforts by identifying which constituents are of greatest concern. Environmental data, by its very nature, is extremely variable, and conclusions are often difficult to make based on limited data points. Nonetheless, these results are of use in shaping regional programs to inform the public about environmental stewardship.

CWC's mission is to preserve and protect coastal watersheds through community stewardship, education and monitoring. The Urban Watch program and the partnership between CWC and the City of Capitola represent a collaboration that supports the goals of each organization and benefits the overall community. CWC staff welcome every possible opportunity to assist local leaders and the community in achieving our goals together.

More information about local water quality data is available at http://coastal-watershed.org or by contacting Debie Chico-Macdonald at (831) 464-9200 or djchirco@coastal-watershed.org.