The Monterey Bay National Marine Sanctuary Citizen Watershed Monitoring Network and the Coastal Watershed Council presents:

Snapshot Day
May 5TH, 2007
Final Report

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Introduction/ Summary

Since Earth Day 2000, volunteers have assembled during May of each year for a one day event to gather water quality data from the water bodies entering the Monterey Bay National Marine Sanctuary (MBNMS). Snapshot Day (SSD) has become an annual event that has created partnerships, drawn over 1000 volunteers to date, and has helped foster an ethic of watershed stewardship between local citizens and the MBNMS watershed. Additionally, the seven years of data collected by volunteers has become an invaluable source of water quality data for the region.

SSD is organized by partnering organizations: the Monterey Bay Sanctuary Citizen Watershed Monitoring Network (Network) and the Coastal Watershed Council (CWC). CWC coordinates the northern half of the MBNMS—San Mateo and Santa Cruz Counties—while the Network focuses on Monterey County south to Morro Bay in San Luis Obispo County.

This year, volunteers gathered on the morning of May 5th at one of four hubs located in the four counties bordering the Sanctuary (San Mateo, Santa Cruz, Monterey, and San Luis Obispo). The hubs helped to facilitate quality assurance protocols, such as the tracking of equipment, chain of custody for lab samples, verification of complete and accurate data sheets, and post calibration of instruments. The hubs also acted as a place for volunteers to meet with their fellow volunteers, exchange information and get last minute instructions.

One hundred and sixty-four citizens volunteered between four and six hours of their time to monitor 180 sites. This year, exactly half of the sites met all of the water quality objectives (WQO) that were measured. This is similar to the 2006 event in which 54% of the sites met all of the WQOs and 2005 in which 53% met all of the WQOs.

Similar to the previous two years, transparency/turbidity and dissolved oxygen were the most common **field** measurement to exceed the WQOs, at 27% and 21% of the sites, respectively.

This year, *E. coli* (bacteria from warm-blooded animals) and nitrate were the **lab-analyzed** parameters that most commonly exceeded their WQOs. *E. coli* exceeded the WQO at 23% of sites (up from 18% in 2006), whereas nitrate exceeded the WQO at 14% of sites (down from 17% in 2006). This year, orthophosphate had an exceedance rate of 12%, down from 21% in 2006.

There were sixteen Areas of Concern (sites that exceeded three or more WQOs) identified this year, down from 26 in 2006 and 18 in 2005. However, most of those sites were on just three water bodies: Santa Rita Creek, Tembladero Slough, and the Salinas Reclamation Ditch.

The information gathered by the trained Snapshot Day volunteers is used to help resource managers focus their attention to areas that need it most. For most water bodies, SSD is the only time they are ever monitored. These data are also used to educate the public and inform public policy. Through these avenues the program can reach its goals of improving water quality. We would like to thank our volunteers and all of our partners for making this event a repeat success.

Amy H. and Larry P. at the Monterey hub.

Central Coast Snapshot Day 2007 was organized by:

The Monterey Bay Sanctuary Citizen Watershed Monitoring Network:
Supports citizen monitoring programs throughout the Monterey Bay National Marine Sanctuary.
(831) 647-4227
www.montereybay.noaa.gov/monitoringnetwork/welcome.html

The Coastal Watershed Council
A public education non-profit advocating the preservation and protection of coastal watersheds through the establishment of community-based stewardship programs.
(831)464-9200 www.coastal-watershed.org

The California Coastal Commission
Provides an important education program linking land and water quality stewardship with coastal resource protection.
(831) 427-4863 www.coastal.ca.gov

The Monterey Bay National Marine Sanctuary (MBNMS) Water Quality Protection Program
Works to protect the watersheds along nearly 300 miles of the Sanctuary's coastline.
(831) 647-4271 www.mbnms.nos.noaa.gov

Volunteer on Atascadero Creek

Participating Agencies and Organizations

Arana Gulch Watershed Alliance
Bay Watershed Education Training Program (B-WET)
Big Creek Reserve
California Coastal Commission
Carmel River Watershed Conservancy
Central Coast Regional Water Quality Control Board
City of Capitola
City of Monterey
City of Pacifica
City of Pacific Grove
City of Santa Cruz
City of Watsonville
Coastal Watershed Council
Creek Environmental Laboratory
Crystal Springs Drinking Water
Earth Systems Science and Policy Program (CSUMB)
Elkhorn Slough National Estuarine Research Reserve
Garrapata Watershed Council
Gayle's Bakery
Gulf of the Farallones National Marine Sanctuary
Monterey Bay Analytical Services
Monterey Bay National Marine Sanctuary
Monterey Bay Sanctuary Foundation
Monterey Regional Water Pollution Control Agency
Morro Bay Volunteer Monitoring Program
Natural Resource Conservation Service, Monterey Cty
Odwalla
Peet's Coffee
San Gregorio Environmental Resource Center
San Gregorio General Store
San Lorenzo Valley High School
San Luis Obispo County Environmental Health
San Luis Obispo County Marine Mammal Center
San Mateo County Environmental Health
Santa Cruz County Environmental Health
Santa Cruz Safeway – Mission Street
Save The Whales
Scott Creek Watershed Council
Sewer Authority Mid-Coastside (SAM)
Starbuck's Coffee
Stormwater and Education Alliance
Surfrider Foundation
The Buttery
The Ocean Conservancy
Trader Joe's
United States Environmental Protection Agency
UC Santa Cruz Environmental Studies Department
Upper Crust Pizza
Upper Salinas Las Tables RCD
Upper Salinas Watershed Coalition
Watershed Institute, CSUMB
Whole Foods Market

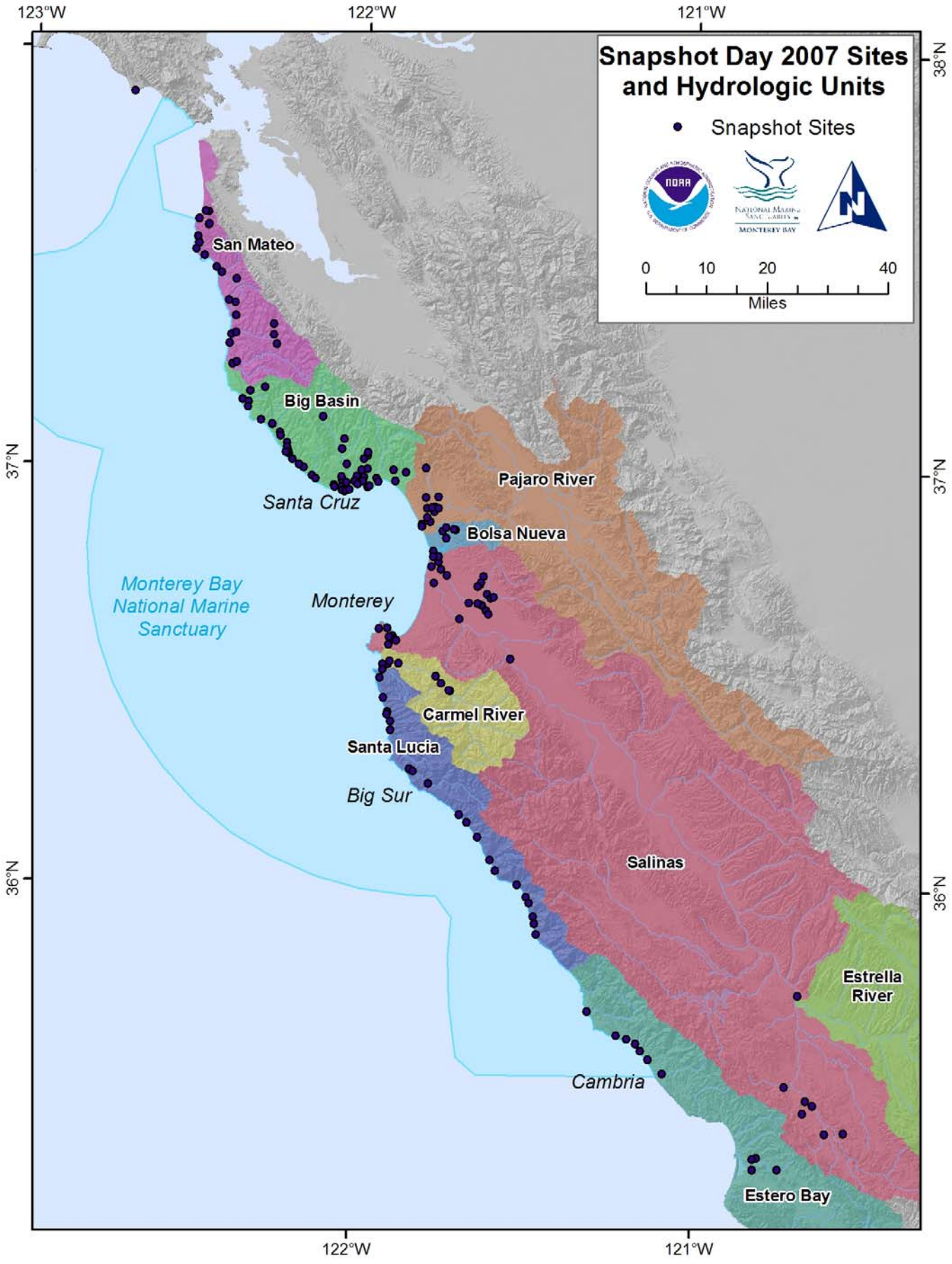

Figure 1. Map of Central Coast monitoring sites

Methods

Trainings were conducted in all four counties in which volunteers learned about the program and its significance, and how to take field measurements and collect samples. They were then divided into teams, assigned an experienced team captain, and given monitoring sites.

During the SSD event, volunteers took field measurements for air and water temperature, dissolved oxygen, conductivity, pH, and transparency or turbidity. They also collected samples to be analyzed at a lab for nitrate, orthophosphate, and *E. coli.* Each monitoring team was equipped with a bucket "kit" that included air and water bulb thermometers or one digital thermometer; either a YSI dissolved oxygen meter, Winkler, or CHEMets kit; an Oakton conductivity meter; Machery-Nagel non-bleeding pH strips; and a transparency tube or dual cylinder turbidity kit. The kits also included distilled water, gloves, paper towels, a trash bag, pens/pencils, sample bottles, and a clipboard with data sheets, instructions, maps, and photo documentation forms.

The sample collection and field measurement protocols used were developed for a Coast Wide Snapshot Day event in 2003 by the State Water Resources Control Board's Clean Water Team. Monitoring results were compared with WQOs designated by the Central Coast Ambient Monitoring Program (CCAMP), the General Basin Plan, or the US Environmental Protection Agency (see Table 1). For this event, valuable data was ensured by following a state approved Quality Assurance Project Plan and Monitoring Plan.

Table 1: Water Quality Objectives

Parameter (units)	Water Quality Objective	Source of Objective
Dissolved Oxygen (ppm)	**Not lower than 7 or greater than 12**	**Basin Plan Objective for Cold Water Fish**
pH	**Not less than 6.5 or more than 8.5**	**General Basin Plan objective**
Water Temperature (°C)	**Not more than 22**	**Basin Plan Objective for Cold Water Fish**
Transparency (cm)	**Not less than 25**	**Central Coast Ambient Monitoring Program (CCAMP)**
Nitrate as N (ppm)	**Not to exceed 2.25**	**Central Coast Ambient Monitoring Program (CCAMP)**
Orthophosphate as P (ppm)	**Not to exceed 0.12**	**Central Coast Ambient Monitoring Program (CCAMP)**
***E. coli* (MPN/100ml)**	**Not to exceed 400**	**EPA Ambient Water Quality Criteria**

Volunteers take transparency measurements on the Salinas River.

Results

It was a clear sunny day along most of the coast. Air temperature ranged from 9.5°C in San Mateo at 9:35 AM to 36.0°C in Monterey at 12:07 PM. One hundred of the sites reported rain in their region less than 24 hours prior to the event. Within Monterey County, accumulation totals ranged from 0.01" in King City to 0.30" in Big Sur.

This year, 50% of sites met the water quality objectives for all parameters (refer to Table 1). Specifically, 90 sites, compared to 103 in 2006 and 86 in 2005, had no exceedance for any of the WQOs. See Table 2 for a quick look at the statistical results. Tabular results of Snapshot Day 2007, by site and parameter, are found in Attachment 3. Spatial results are in Figures 3 – 6.

Water Temperature

Just as temperature on land affects the comfort and activity of terrestrial plants and animals, the temperature of the water affects the life and health of aquatic ecosystems. Many fish species and other aquatic life need specific temperatures in which to survive and reproduce. Water temperature can also affect the amount of dissolved oxygen in the water column and the rate of photosynthesis for aquatic plants. Human projects that decrease water flow or remove streamside vegetation can cause water temperatures to increase to undesirable levels and harm aquatic ecosystems.

Snapshot Day data was largely taken during the morning hours, so temperatures do not necessarily reflect the daily maximum temperatures for the water body.

The Basin Plan Objective sets the upper limit of water temperatures at 22 degrees Celsius (°C). Temperatures above 22°C can harm cold water fish such as Coho salmon and steelhead, as well as other aquatic organisms. The average water temperature at sites was 13.9°C and the median temperature was 13°C. Five sites exceeded the WQO for water temperature this year, three of which were Moro Cojo sites; there were no exceedances in 2006.

Dissolved Oxygen

Oxygen, whether in the atmosphere or the water, is essential to life. Aquatic organisms rely on sufficient amounts of dissolved oxygen to perform regular behaviors like feeding, spawning, and incubating. Excessive nutrients in water can cause an increase in plant growth; when organisms break down plant matter, they use oxygen, depleting the oxygen available for other organisms.

Although the General Basin Plan Objective for dissolved oxygen is not less than 5 milligrams per liter (mg/l), we use the WQO for Cold Water Fish, which is not less than 7 mg/l or greater than 12 mg/l. These numbers are based on the amount of dissolved oxygen needed by migrating steelhead trout. This year, 21% of sites exceeded the WQO for dissolved oxygen. Of those, 92% were below the WQO, meaning

Table 2. Results Statistics

Parameter	WQO	Sampled/Tested	Exceedances	Exceedances	Result	Result	Result	Result
Air Temp (°C)	none	166	N/A	N/A	9.5	36	16.8	16.5
Water Temp (°C)	≤ 22	179	5	3%	8.5	26	13.9	13.0
Dissolved Oxygen	≥ 7, ≤12	179	37	21%	1.0	13.3	8.6	9.2
pH	≥ 6.5, ≤8.5	181	5	3%	6.0	9.5	7.2	7.0
Conductivity (µS)	none	174	N/A	N/A	0	25000	N/A	N/A
Transparency (cm)	≥ 25	118	16	13%	2.2	>120	93.7	120
Turbidity (JTU)	≤ 20	51	7	14%	0	80	8.57	5
E. Coli (MPN/100ml)	≤ 400	176	40	23%	0	13734	549.11	101
Total coliform (MPN/100m	≤ 10,000	114	16	14%	146	≥ 24,192	5053.22	1789
Nitrate-N (mg-N/L)	≤ 2.25	174	25	14%	0	37	2.21	0.1
Orthophosphate-P (mg-P/l	≤ 0.12	178	21	12%	0	4.26	0.12	0.05

that the water was oxygen deprived. For the remaining 8%, three sites, had saturated oxygen levels. These oxygen saturated sites were both in the Salinas Reclamation Ditch. For all sites, the average dissolved oxygen level was 8.6 mg/l, similar to last year's average of 8.8 mg/l, 2005's average of 8.9 mg/l, and 2004's average of 8.5 mg/l.

Conductivity

An indication of the amount of total solids in the water, a conductivity measurement tells us how well the water can conduct an electrical current. The more total solids in the water—like salts, minerals, acids, and metals—the higher the conductivity. Conductivity is a relative measurement; that is, there is no standard for conductivity, and the measurements vary with the source and location of water.

Because of the relative nature of conductivity measurements, there is no water quality objective for them. However, once a baseline measurement is established at a site, the measurement can help track changes in the composition of the water body. For example, a low conductivity reading at a site that is known to have high readings may indicate recent rainfall.

pH—Alkalinity/Acidity

pH is a measure of the percent of hydrogen ions in a water column. A value of 7 is neutral, above 9 is alkaline and below 5 is acidic. The bodies of many aquatic organisms require a very narrow range of pH to carry out necessary chemical reactions. Extraordinary pH levels can harm fish gills and fins.

The General Basic Plan Objective for pH is between 6.5 and 8.5. The average pH for the Central Coast was 7.2, with a median of 7. This is very similar to last year's average and median of 7.3 and 7, respectively. In total, five sites exceeded the WQO (3%). As in 2006, two of the three Moro Cojo sites had very high pH levels—9.0 and 9.5. These sites have exceeded this water quality objective five years running. Two sites in Salinas had pH levels at or below 6.5; Natividad Creek and Atascadaro Creek. Last year, just one site had a pH value below 6; in 2005, 14 sites were below the WQO for pH.

Stephanie Hee, Erica Burton, and Anna Holden at Natividad Creek in Salinas.

Transparency/Turbidity

Turbidity and transparency measure the amount of suspended solids in the water. Normal turbidity measurements vary for different water bodies, but high turbidity levels can indicate problems upstream such as erosion, nutrient loading, or extraordinary algae growth. All but three Snapshot Day sites measured transparency or turbidity. Sixty-nine percent of sites used a transparency tube, while the rest of sites used the dual cylinder method or turbidimeters.

Although the two terms are used interchangeably in the text, the measurement methods for transparency and turbidity are different. CCAMP's Action Level for transparency is 25 centimeters or below. An exceedance of this action level means that the water is so turbid that a miniature Secchi disc cannot be viewed through 25 centimeters of water. This year, 16 sites, or 13%, did not meet

this WQO. This is down from 20 sites in 2006. As in the previous four year, the majority of these sites were located in the lower Salinas Valley watershed.

The "Dual Cylinder" method for turbidity does not have an established WQO, however, a typical turbidity measurement for muddy water after a storm is between 20 - 50 Jackson Turbidity Units (JTU). Sites equal to or above 20 JTU were considered an exceedance. Seven of 51 sites, or 14%, fell in this range. This is up from 9% last year . However, this year, the Watsonville Slough, which had measurements of 50 and 70 JTU's last year, had turbidity measurements well within the acceptable range.

While monitoring, volunteers also make visual observations of turbidity, and can classify water as clear, cloudy, or murky. This year, 69% of sites were classified as clear; this is up from 67% last year, but down from 75% the three years prior.

Nutrients

The two nutrients measured were nitrate and orthophosphate. They are naturally occurring nutrients in streams, rivers, and lakes. Excess nutrients can be leached into water bodies in the form of fertilizers, pesticides, detergents, animal waste, sewage, or industrial waste. Heightened levels of nutrients can lead to excessive algal or aquatic plant growth, which depletes the amount of oxygen available in the water column.

Nitrate – This year, 14% of sites exceeded the CCAMP action level of 2.25 mg-N/l, down from 17% last year. The average detection for nitrate-N was just under the WQO of 2.21 mg-N/l. There was a large range in concentrations from non-detect to 37.0 mg-N/l. However, this is lower than last year's average of 2.70 mg-N/l. As in 2006, most nitrate exceedances were found between the Watsonville Slough and the Lower Salinas Valley, except for two in Morro Bay, one in Moro Cojo, and one in the city of Santa Cruz. The highest concentration of nitrate was found in Moro Cojo at Upper Castroville Slough, but Upper Natividad Creek, Gabilan Creek, Reclamation Ditch, and Alisal Creek all had concentrations between 19 and 36 mg/l (Figure 4).

Orthophosphate – Twelve percent of sites reported exceeding the WQO of 0.12 mg/l for orthophosphate-P. This is far below last year's exceedance rate of 21%, 2005's rate of 18%, and 2004's rate of 24%. The average detection for orthophosphate was at the WQO of 0.12 mg-P/l; the median was 0.05 mg-P/l. Concentrations ranged from non-detect at the majority of sites to 4.26 mg-P/l in Elkhorn Slough (Figure 5).

Robert and Denyse Frischmuth and Warren Yogi at Soberanes Creek.

Coliform

Coliform bacteria are generally used as an indicator of food and water sanitation. Most coliform bacteria originate from the feces of warm blooded animals, and therefore can indicate the presence of human sewage or wildlife feces. While coliform bacteria are usually not the cause of sickness, their presence can indicate that other pathogens are present. These other forms of feces-born organisms can

cause diseases such as hepatitis A, bacterial meningitis, and encephalitis.

The EPA has set a WQO for *E. coli*, at 400 MPN/100ml. This year, 40 sites, or 23%, were in exceedance of this WQO. This is up from last year's exceedance rate of 18% and 2005's rate of 16%. The highest levels of *E. coli* were found in Santa Rita Creek (13,734 MPN/100ml), Tembladero Slough (9,768 MPN/100ml), and in Santa Cruz at Corcoran Lagoon (6,867 MPN/100ml) (Figure 6). Last year, all three of the highest exceedances were found in Santa Rita Creek in Salinas.

Areas of Concern

"Areas of Concern" describe sites that have exceeded three or more water quality objectives. Over the past several years, a trend has emerged of more than one Area of Concern per water body. For example, this year the Reclamation Ditch, Santa Rita Creek, and the Tembladero Slough all have more than one site that is an Area of Concern. Last year, a switch was made to the graph in Figure 2 to represent water bodies instead of individual sites. This trend information points to increasing problems on certain water bodies.

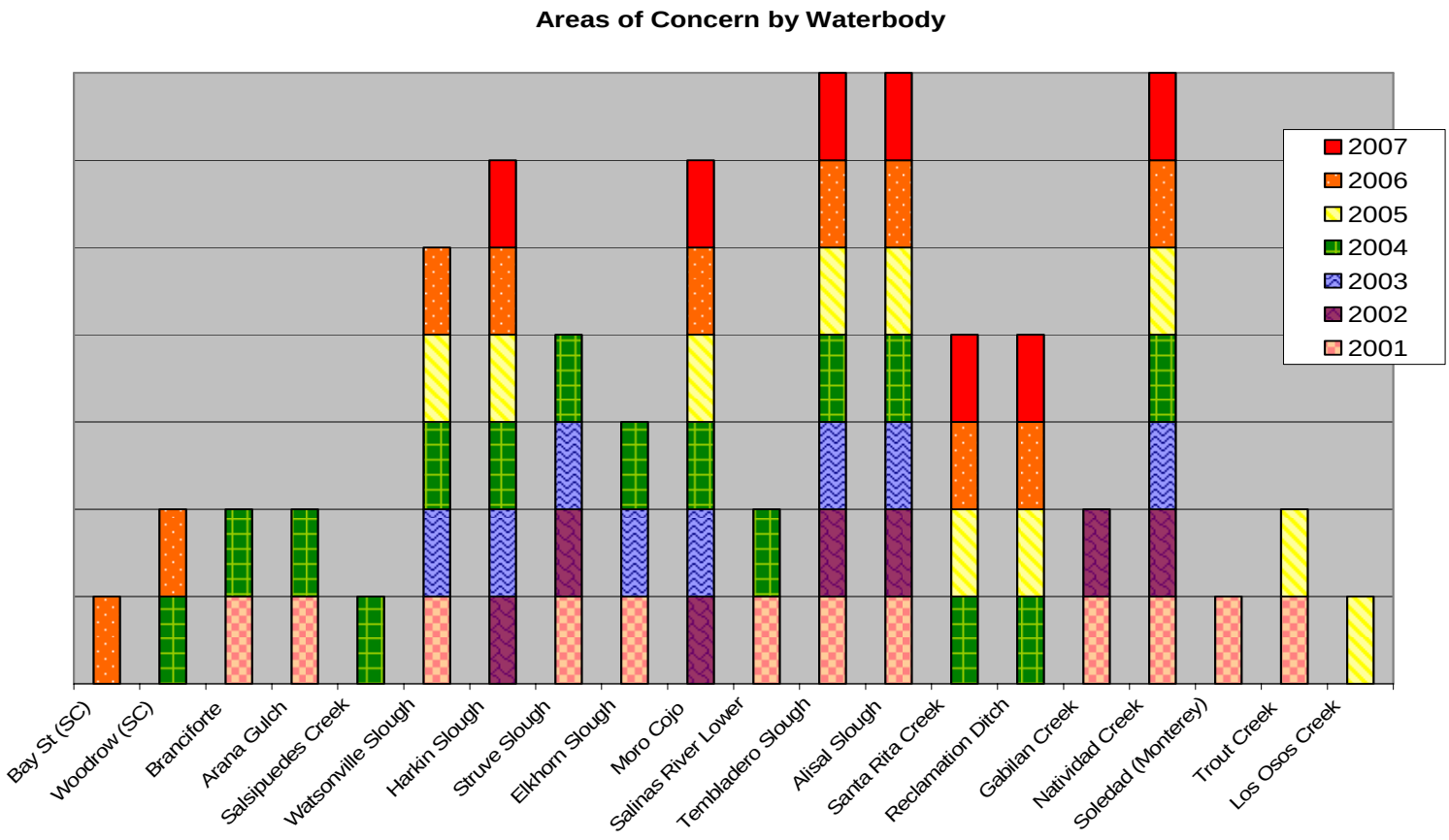

Figure 2. Seven year trend of water bodies designated as Areas of Concern. (Soledad has not been monitored since 2003).

This year, 16 sites were designated Areas of Concern on 7 waterbodies. This is down from 26 sites in 2006 and 18 in 2005. All of these water bodies have been designated as Areas of Concern before, some since 2001 (see Figure 2). This year, most water bodies designated as Areas of Concern are from the Lower Salinas Valley. Alisal Slough, Natividad Creek, the Salinas Reclamation Ditch, Santa Rita Creek, and Tembladero Slough have been Areas of Concern every year they were monitored. Just two sites were outside of this area; one site on the Pajaro River and another on San Simeon Creek. (These areas are not reflected in Figure 2).

As last year, the 2007 Areas of Concern were compared with California's newly-revised list of impaired water bodies (2006 "303(d) list"). The 303(d) list was created by the Regional and State Water Quality Control Board and identifies impaired state waterways. The methodology for this listing can be found at the State Board web site, www.swrcb.ca.gov. Since the list was revised for 2006, the comparisons from last year have changed.

Three of Snapshot Day's Areas of Concern are listed on the 303(d) list as impaired water bodies. These are Moro Cojo, Natividad Creek, and the Tembladero Slough. One Area of Concern, Santa Rita Creek, is recommended for listing on the 303(d) list. The Salinas Reclamation Ditch, an Area of Concern since 2004, is currently being recommended for 303(d) delisting.

Volunteers Jason LaForgia and Carolyn Skinder on Garzas Creek.

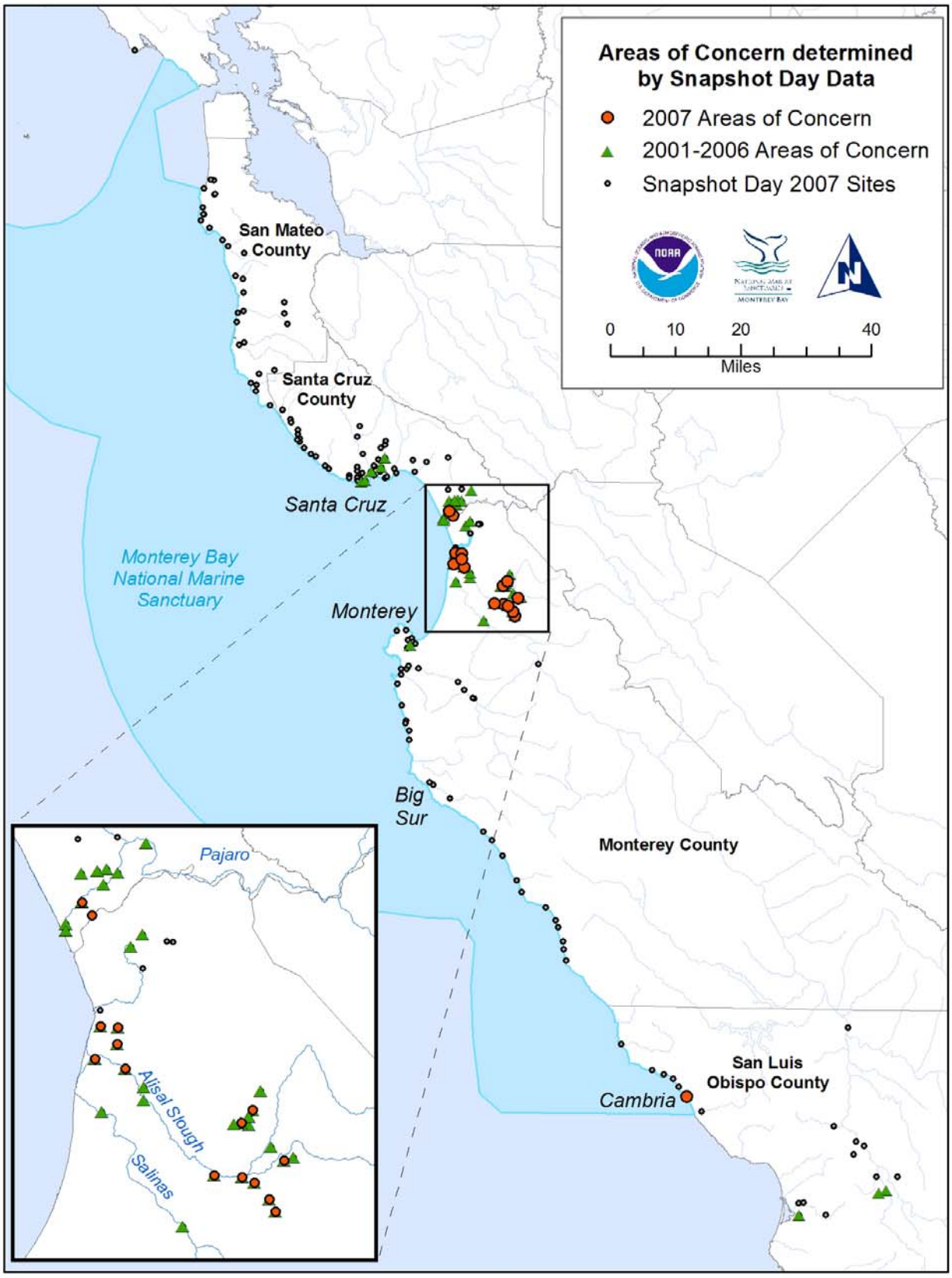

Figure 3. Map of Central Coast Areas of Concern for 2001 -2007.

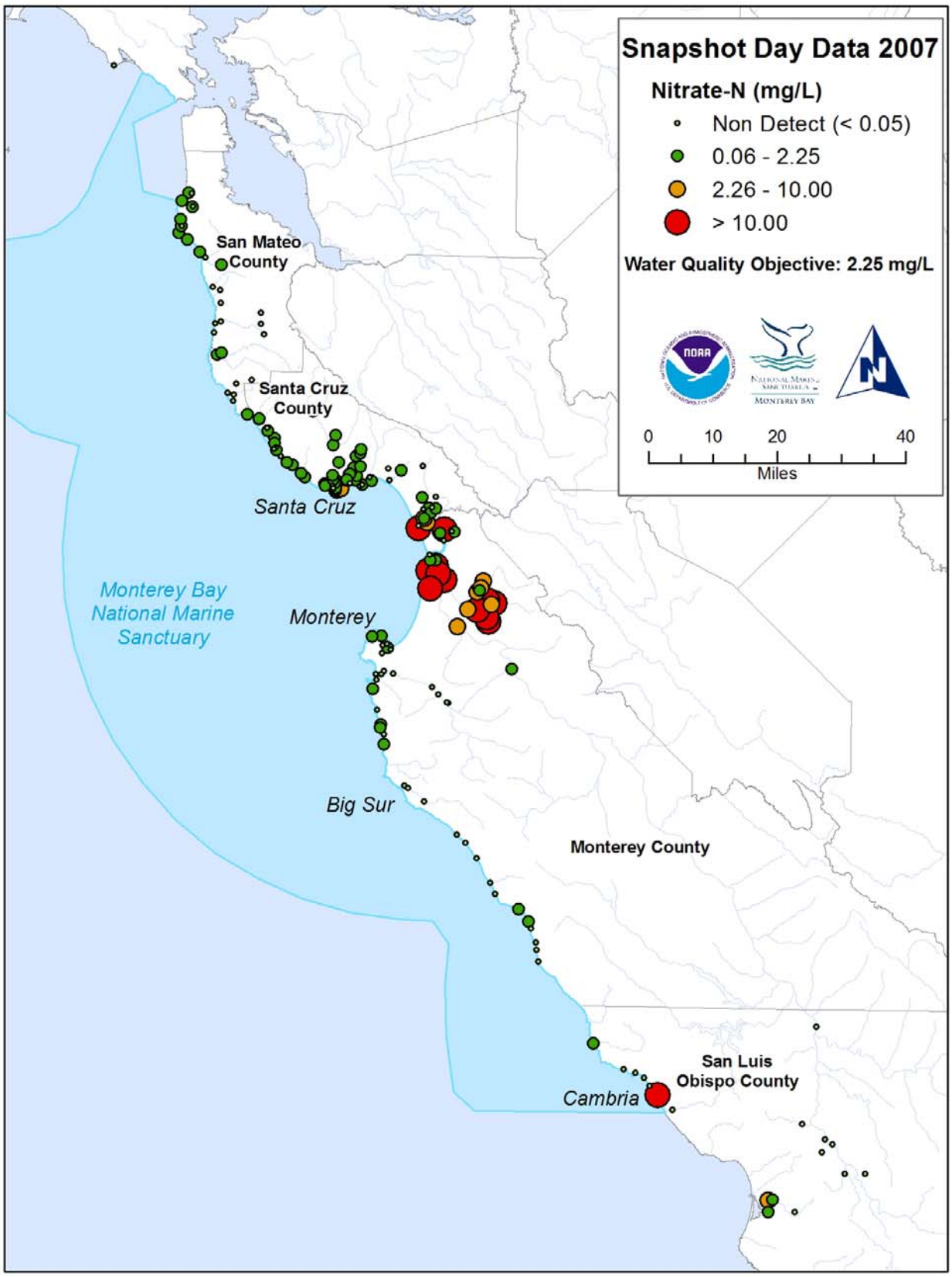

Figure 4. Central Coast Snapshot Day Nitrate-N Results

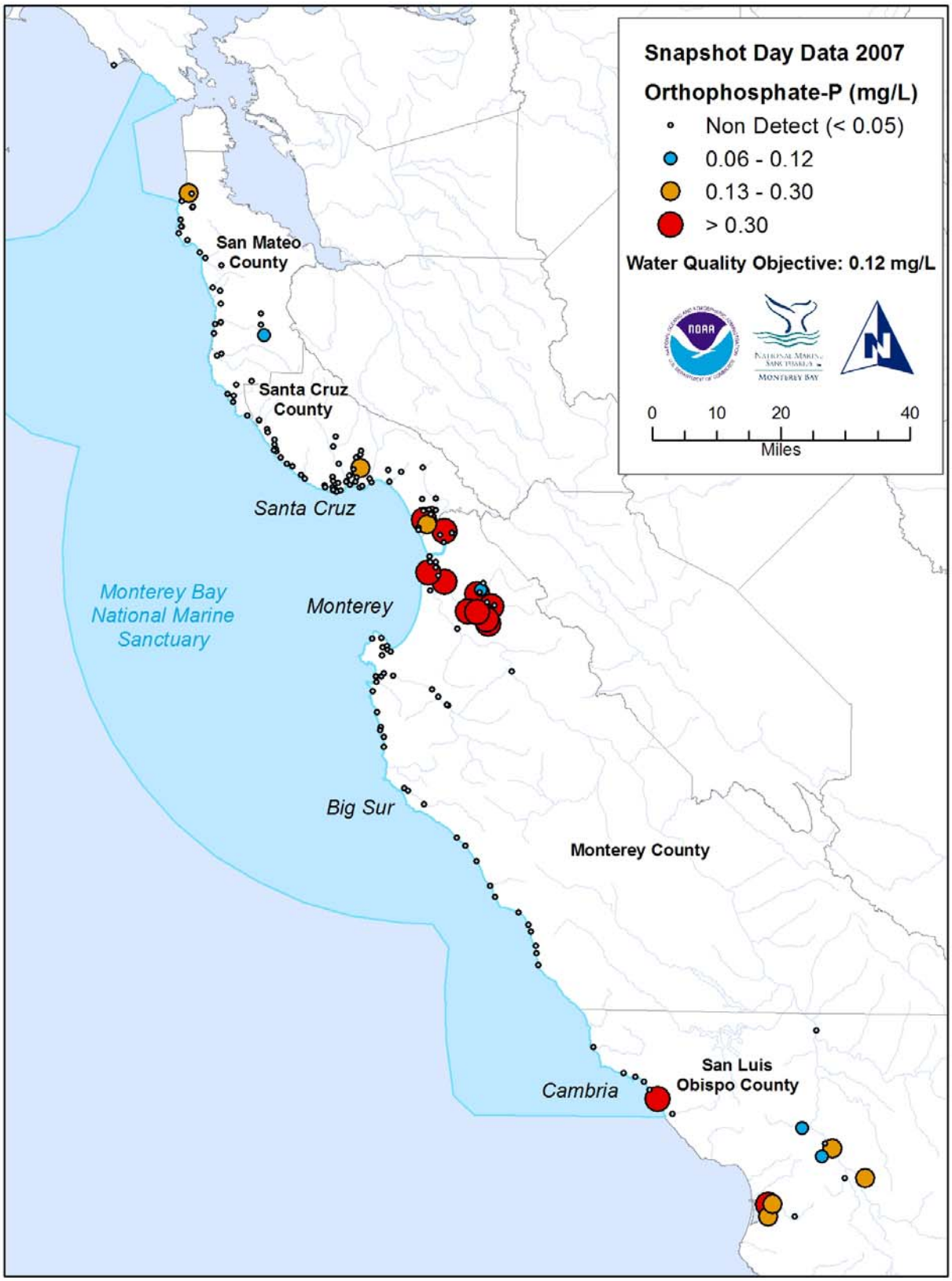

Figure 5. Central Coast Snapshot Day Orthophosphate-P Results

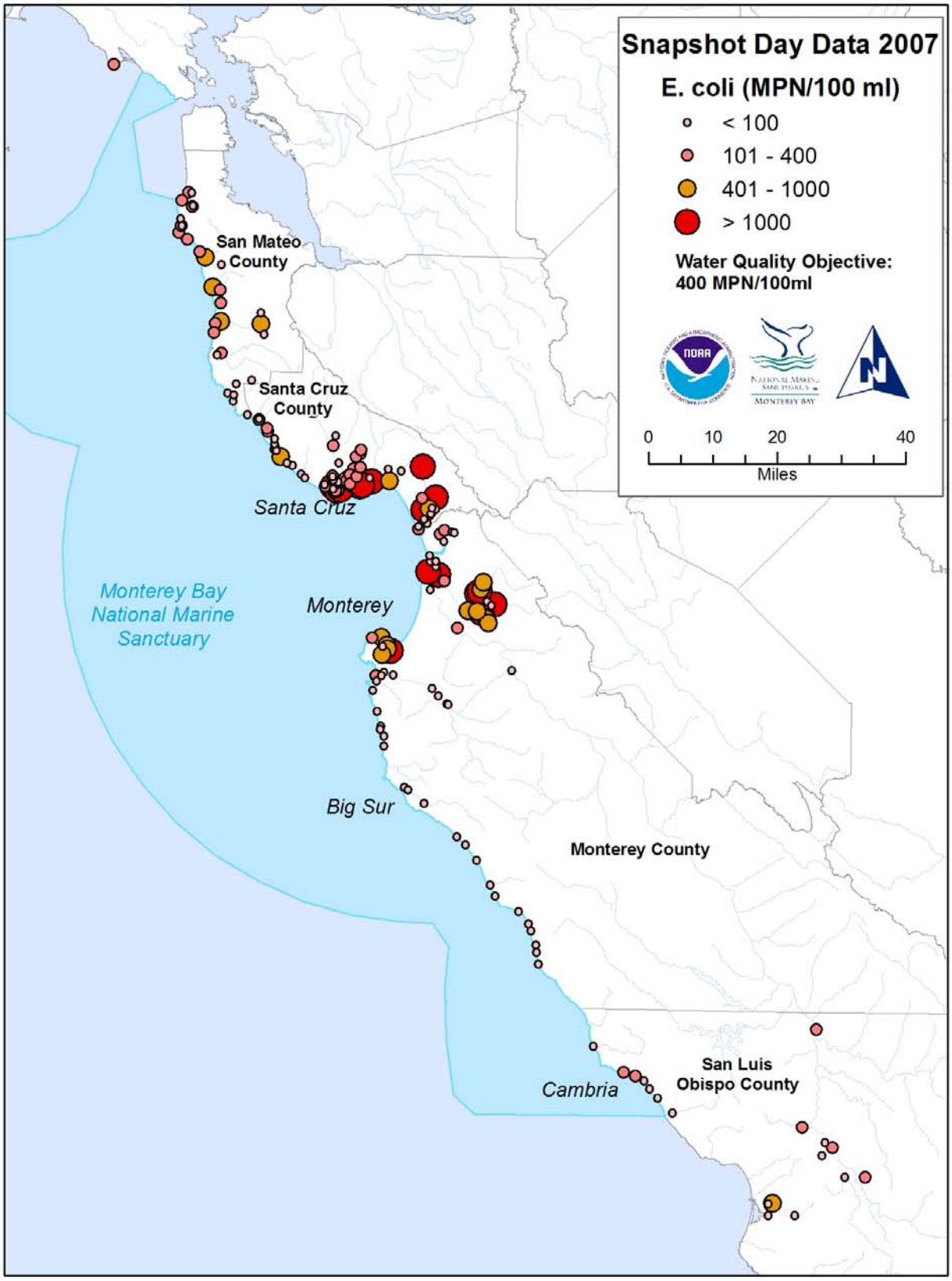

Figure 6. Central Coast Snapshot Day *E. coli* Results

Conclusion

In its seventh year, the Snapshot Day annual event brought together 164 citizens to monitor the water quality of 180 different sites. Snapshot Day is a successful annual event due to their continued interest and support. It could not be done without them. Truth be told, in this day and age, a monitoring effort of this magnitude could only be completed by a large group of dedicated volunteers.

Carmel River at Rosie's Bridge

The 2007 results are similar to previous years and yet show some promising changes. However, the weather may have had some affect on the results. It rained the day before we monitored, up to 0.30 inches in some locations along the coast.

More than half of the sites monitored showed good conditions for cold water fish, but of the sites that didn't, most continue to exceed the same constituents. Water bodies in the lower Salinas watershed continue to have high nutrient, turbidity, and *E. coli* concentrations, but water bodies on the San Mateo and Big Sur coast have few exceedances.

This year did show promising results in that orthophosphate concentrations and exceedences were down from previous years.. Also, the percentage of exceedances for most parameters dropped from previous years.

Last year, two urban sites were listed as Areas of Concern—Bay Street and Woodrow in Santa Cruz. This year, neither were listed. The number of sites identified as Areas of Concern dropped from the past three years. The 2007 results closely resemble 2002 and 2003 results, when just 11 and 13 sites, respectively, were identified as Areas of Concern.

In looking at the maps on pages 11 through 14, it is clear the primary watersheds that need attention are in the central Monterey Bay area. There is a lot of effort being focused there on agricultural management measures. It is our hope that eventually we will see improvements in water quality due to those efforts. Elevated *E. coli* concentrations are more widespread throughout both urban and agricultural land uses. Management measures and source tracking are needed in the urban areas.

Once more, the Network would like to thank all of the volunteers who made this event possible. Without help from dedicated citizens, Snapshot Day could not happen. The data generated by volunteers is a valuable resource for identifying long term trends in central California coastal water bodies. Volunteer help enables resource managers to more accurately recognize where their efforts are needed the most.

Attachment 1: Snapshot Day Participants

Hub Participants	
Tamara Doan	Bridget Hoover
Anne Jensen	Debie Chirco-Macdonald
Colleen Sutter	Matt Cooper
Maris Sidenstecker	Lucy Kemnitzer
Bill Leland	Gerry Doan
Bruce Arthur	Josh Fodor

Team Leader	Team Members
Adams, Phil	Carole Adams
Agron, Dale	Neil Agron, Peter Hiller, Clive Sanders
Albanese, Claude	Hunter Kilpatric, Gene Kallard, Marj Sewell
Alford, M.	L. Johnson
Anter, Barry	M. Konviser, I. Konviser
Berry, Chris	Zeke Bean, Rosemary Kemmer
Brayman, Marie	Justin Meek
Bryce, Amy B.	Jennifer Stone, Joel Froloff
Burton, Erica	Anna Holden, Todd Martz, Stephanie Hee
Campbell, Vai	Ron, Jeff, Nicola
Cooper, Matt	Paige Cooper, Ashley Gilreath
Doan, Tamara C.	Sally Rayn (just collected samples)
Dominic Gregorio	June Gregorio, Stephanie Flax, Peter de Jung, Webb Johnson
Ekelund, Ken	Adriane Tabog, Xeronimo Castraneda, Gary Peterson
Emanuelson, Lisa	Dave Parara
Frischmuth, Robert	Denyse Frishmuth, Warren Yogi
Funk, DJ	Chris Robinson
Gilreath, Ashley	Stephanie F, Stephanie Osby
Greening, Jonathan	Ann Coleman, Lani Clough
Hoover, Don	Tera Hoover
Horvath, Fran	Art Evjan, Alex , Lindsay
Hull, Kent	
Johnsen, Jeff	Carolyn Skinder, LaForgia
Kasa, Laura	Milena Clark, Natalie Clark, Ross Clark
Keary Sorenson	Steve Saiz, Sally Sorenson

Kemnitzer, Lucy	Paula Gibson
Kitajima, Ann	Kelly Young, Nathan Ferguson, sue Hood, Liz Curran
Kozak, Chuck	
Kwasny, Jeff	Mark Bowen, Elisabth Fagan
Lambert, Cheryl	Sarah Dodge
Largay, Bruan	bruce dan, aidan largay, susan ferrez
Lee, Robin	Ken Reese, Patty Reese
Lusbrink, Karl	Loro Patterson, Rita Jaramillo
McCloud, Jackie	Brad Macdonald, Sierra Macdonald
Meyers, Tamara	Colleen Sutter
Mohr, Joanne	Tiphanie Dillon, Chris Beegan, Kerry Ritter
Montgomery, Barbara	Gary Conley
Nachankin, Jason	Art Haseltine
Panton, Neil	Mary Panton, Nigel Webb, Suzana Gulmert
Pullin, Tony	Leonard Woren, Jeannette Tracy
Roest, Michele	Marti Kinzer
Rollins, Rick	Sally Raun, Elaine Shen
Ruby, Armand	Nate Ruby, Gail Olson
Scannel, Mary	Katie Lannon, Bridget Dobrowski, Juan Ponce
Schmidt, Ann	Tomm Reeds, Larry Petersen, Amy H.
Sleteland, Holly	Doug Anderson
Stevens, Gene	Sharon Shoaf, Travis Baggett, Katie Schonemah
Tayor, William	Dave Fichtner
Teetzel, Diana	PJ Webb, Roger Teetzel
Thistlethwaite, Rebecca	
Towe, Carol-Ann	Kate Rodriguez, Meredith Manning
Van Hise, Bonnie	Quyen-Thi Nguyen
Zayas, Natalie	Alex Gray, Bethany Raymand, Bella Shandler, Vera Hampton
Zenda, Michelle	Tish Bertino, Cameron Mumper

Attachment 2: Field Data Sheet

DOC_ID# :

Monterey Bay National Marine Sanctuary
Field Data Sheet

GPS Coordinates: Datum W: N: GPS_ID:

Please **Use one sheet for each Station**. Use back for comments.

Hydrologic Unit ID:

Watershed: Station (Site) ID:

Watershed Group Name: Waterbody:

Site map is attached to this data sheet, please update if necessary. Waterbody Type:

Flow discharge (circle one):

Stagnant (NOT Flowing); Trickle (< 1 quart/sec);
Moderate (< 5 gal/sec); High (> 5 gal/sec)

Weather Conditions (circle):

Has it rained within the last 24 hours? Y / N

-- SKY --	-- PRECIPITATION --	-- WIND --
no clouds	none	none
partly cloudy	foggy	breezy
heavy clouds	misty	windy
overcast	rain	blustery

Volunteer Monitors

TEAM LEADER (list full name & phone #):

2)

Phone: ( ) – 3)

4) 5)

(list additional names on back)

Time of Field Measurements:

INSTRUMENT ID	PARAMETER	RESULT	Replicate	UNITS
	Air Temperature			F or C
	H2O Temperature			F or C
	pH			pH units
	Dissolved Oxygen			mg/l (ppm)
	Conductivity			µS mS
	Turbidity			JTU NTU
	Transparency			cm
				UNIT
				UNIT
				UNIT

(circle appropriate unit)

Water Clarity (circle one):

clear cloudy murky

(water itself, not scum)

Sampling device used? Y N

If so, what kind?

Kemmerer bottle

other:

Notes and Observations :

(include any equipment comments/problems or observations such as water color, trash composition, etc...)

Fish or Wildlife Observed:

(describe number seen, length of fish, and behavior)

Sample Collection:

Sample ID:	Time Collected:	Collected by:	Type:	Container type :
			Bacteria	
			Nutrient	

Sample Custody:

Relinquished By:	Received By:
Date /Time:	Date /Time:

This event sponsored by the California Coastal Commission and Monterey Bay National Marine Sanctuary
In collaboration with the MBS Citizen Watershed Monitoring Network, Coastal Watershed Council and The Ocean Conservancy.

Do not jeopardize your personal safety to complete this datasheet.

Attachment 3: Results by County/Station (Yellow represents exceedance of WQO's)

County	StationID	Sample Collection Time	AirTemp (Deg C)	Conductivity (µS)	Dissoved Oxygen (ppm)	Transparency (cm)	Turbidity (JTU)	pH	Water Temp (Deg C)	Total coliform (MPN/100ml)	E. coli (MPN/100ml)	Nitrate-N (mg/L)	Orthophosphate-P (mg/L)
Marin	201-ALC-11	10:57	13.0	977	11.1		23	7.8	12.4	2613	384	0.02	0.05
Marin	201-BOL-01				8.3			7.5	13.4	3255	448	0.05	0.05
Marin	201-DUX-10		13.0	1299	7.5		23.6	8.1	15.6	1720	341	0.02	0.05
Marin	201-PIG-10	10:40	15.4	190	10.3			7.4	11.8	631	63	0.10	0.05
Monterey	306-CARNE-32	11:50	16.5	586	2.5		10	6.5	11.0	4884	5	0.10	0.05
Monterey	306-CARNE-33	11:30	15.0	661	1.0		80	7.0	10.5	1054	10	0.05	0.05
Monterey	306-ELKHO-31	11:13	19.0	0	7.0	84.6		8.0	16.0		20	0.05	0.05
Monterey	306-ELKHO-32	10:54	18.0	0	5.0	30.1		8.0	18.5		316	1.71	0.05
Monterey	306-ELKHO-33	11:46	16.5	0	7.0	74.2		8.0	17.5		20	0.05	0.05
Monterey	306-ELKHO-34	10:20	26.0	1210	10.0	70.4		7.5	14.5		292	19.00	4.26
Monterey	306-MOROC-31	10:53	22.0	3600	12.0	6.5		8.5	26.0		40	37.00	0.05
Monterey	306-MOROC-32	11:31	18.0	12000	5.0	6.0		9.0	24.0		20	1.48	0.05
Monterey	306-MOROC-33	12:15	18.0	19910	10.0	22.2		9.5	24.0		80	0.31	0.05
Monterey	307-CARME-31	12:15	16.0	510	6.0	120.0		7.0	16.2		20	0.05	
Monterey	307-CARME-33	10:25	17.0	420	10.0	120.0		7.0	13.2		20	0.05	0.05
Monterey	307-CARME-35	11:37	18.0	420	9.0	120.0		7.0	13.9		40	0.05	0.05
Monterey	307-CARME-36	10:40	18.5	430	8.0	120.0		7.0	13.8		62	0.05	0.05
Monterey	307-CARME-37	11:40	18.0	480	8.0			7.0	16.1		40	0.05	0.05
Monterey	307-CARME-39	10:20	13.7	900	5.0	120.0		6.5	16.7		148	0.05	0.05
Monterey	307-GARZA-31	11:20	20.0	260	10.0	120.0		7.0	12.3		62	0.05	0.05
Monterey	307-HATTO-31	13:00	20.0	1270	8.0		24	7.0	13.3		82	0.05	0.05
Monterey	308-BIGCR-31	12:00	13.4	370	10.0	120.0		7.5	12.1		20	0.05	0.05
Monterey	308-BIGSU-31	10:15	23.0	340	12.0	120.0		7.0	12.5		20	0.05	0.05
Monterey	308-BIGSU-32	10:41	21.0	30	8.0	120.0		7.5	17.6		20	0.05	0.05
Monterey	308-DOUD-31	10:30	14.9	290	10.0	120.0		6.5	12.0		20	0.41	0.05
Monterey	308-GARRA-31	11:35	13.6	310	11.1	117.5		6.5	12.1		20	0.15	0.05
Monterey	308-HOTSP-31	12:40	16.0	390	12.0	120.0		7.5	12.6		20	0.05	0.05
Monterey	308-LIMEK-31	11:00	12.5	380	10.0	120.0		7.5	11.8		20	0.30	0.05
Monterey	308-MALPA-31	12:12	15.8	350	11.0	117.5		7.0	13.1		20	0.85	0.05
Monterey	308-MCWAY-31	12:19	18.0	370	12.0	120.0		7.0	12.4		20	0.05	0.05
Monterey	308-MILLC-31	10:30	15.3	450	11.0	120.0		7.5	11.3		20	0.08	0.05
Monterey	308-PALOC-31	11:20	11.9	510	8.0	70.0		7.0	11.0		62	0.05	0.05
Monterey	308-PARTI-31	11:54	20.0	360	12.0	120.0		7.5	12.0		20	0.05	0.05
Monterey	308-PLASK-31	9:00	11.7	450	11.0	120.0		7.5	10.3		40	0.05	0.05
Monterey	308-PREWI-31	9:35	12.3	380	10.0	120.0		7.5	10.4		20	0.05	0.05
Monterey	308-ROCKY-31	12:58	13.5	300	11.4	117.5		7.0	11.2		20	0.09	0.05
Monterey	308-SANJO-31	11:10	23.0	200	11.0	120.0		6.5	12.9		82	0.05	0.05
Monterey	308-SOBER-31	11:45	18.6	300	10.0	120.0		7.0	12.2		20	0.05	0.05
Monterey	308-SYCAM-31	11:15	18.0	360	5.0	120.0		7.0	12.2		20	0.05	0.05
Monterey	308-VICEN-31	11:40	12.0	410	10.0	120.0		7.5	10.9		20	0.05	0.05
Monterey	308-WILDC-31	10:05	13.3	500	10.0	120.0		7.5	10.6		20	0.05	0.05
Monterey	308-WILLO-31	8:30	12.0	380	10.0	120.0		7.5	10.7		20	0.05	0.05
Monterey	309-ALISA-32	11:55	20.6	1130	9.0	9.0		7.0	16.4		1812	19.00	0.55
Monterey	309-ASILO-31	11:50	15.0	1600	5.0	120.0		7.0	14.5		104	0.50	0.05
Monterey	309-CENTR-31	11:00	14.0	1700	9.0	120.0		7.5	14.0	0	0	1.77	0.05
Monterey	309-DOLPH-31	10:55	15.2	1590	8.0	120.0		7.0	12.0		646	0.05	0.05
Monterey	309-GABIL-31	10:27	17.1	1090	9.0	118.0		7.0	19.2		82	26.60	0.05
Monterey	309-LIBRA-31	11:57	21.2	1970		120.0		7.0	13.0		618	0.31	0.05
Monterey	309-MAJOR-31	12:07	36.0	1550	7.0	120.0		7.0	15.0		2100	0.05	0.05
Monterey	309-NATIV-31	10:51	17.5	370	3.0	20.0		6.0	13.7		40	3.18	0.70
Monterey	309-RECDI-31	12:20	18.0	1000	12.0	20.8		7.5	17.8		682	8.59	0.32
Monterey	309-RECDI-33	11:00	19.5	1000	7.1	5.0		7.0	13.2		918	17.90	0.53
Monterey	309-RECDI-34	11:44	17.5	1300	12.5	14.5		7.5	17.8		672	10.10	0.31
Monterey	309-RECDI-35	10:23	19.5	1000	10.1	4.4		7.0	16.2		870	22.60	0.65
Monterey	309-SALIN-31	10:29	20.0	1630	7.0	38.2		7.5	18.0		62	17.20	0.05
Monterey	309-SALIN-32	12:08	17.5	570	11.0	27.4		7.8	21.0		172	3.21	0.05
Monterey	309-SALIN-33	10:25	19.6	380	10.0	29.0		7.5	15.2		40	0.30	0.05
Monterey	309-SKYLI-31	10:03	21.0	480	7.0	16.0		7.0	15.0		432	0.05	0.05
Monterey	309-SRITA-32	11:00	18.5	700	7.4	11.2		6.5	13.1		1008	1.30	0.05
Monterey	309-SRITA-33	10:21	20.0	1000	10.5	32.3		8.5	20.5		584	6.70	0.05
Monterey	309-SRITA-34	11:35	20.0	800	4.8	7.5		7.5	18.3		602	4.39	0.06
Monterey	309-SRITA-35	12:10	17.0	6920	6.9	2.2		7.0	22.8		13734	4.87	1.10
Monterey	309-TEMBL-31	10:17	13.4	1290	5.0	5.0		7.0	17.0		2492	21.70	0.33
Monterey	309-TEMBL-32	11:06	17.0	1940	12.0	28.2		8.0	20.0		126	21.30	0.38
Monterey	309-TEMBL-33	11:40	19.0	1510	9.0	8.8		6.5	16.0		9768	20.60	0.05
Monterey	309-UPPER-31	11:22	18.3	1330	7.0	33.0		7.0	15.8		6510	36.03	0.05
Monterey	309-VETER-31	10:10	17.5	900	7.0	47.2		7.0	12.0		40	0.05	0.05
San Luis Obis	309-ATASC-41	10:15	16.5	1100	6.0	109.0		6.3	14.0	4106		0.00	0.11
San Luis Obis	309-ATASC-42	9:00	12.5	580	7.0	109.0		6.5	12.0	2909		0.00	0.01
San Luis Obis	309-PASOR-41	10:23	16.1	980	7.6	60.0		7.8	15.2	1732	345	0.00	0.06
San Luis Obis	309-SALIN-44	9:50	15.0	920	11.0	109.0		6.5	19.0	10462	216	0.00	0.03

Attachment 3: Results by County/Station cont. (Yellow represents exceedance of WQOs)

County	StationID	Sample Collection Time	AirTemp (Deg C)	Conductivity (µS)	Dissoved Oxygen (ppm)	Transparency (cm)	Turbidity (JTU)	pH	Water Temp (Deg C)	Total coliform (MPN/100ml)	E. coli (MPN/100ml)	Nitrate-N (mg/L)	Orthophosphate-P (mg/L)
San Luis Obisp	309-SALIN-46	9:04	15.6	1316	5.9	60.0		7.8	14.6	3255	256	0.00	0.23
San Luis Obisp	309-SALIN-47	8:10				60.0				7270	161	0.00	0.22
San Luis Obisp	309-SMARG-41	8:27	12.0	1040	6.0	118.0		6.8	14.5	6131	63	0.00	0.03
San Luis Obisp	310-ARROY-41	12:30	15.6	1200	6.0	120.0		7.3	16.2	1081	389	0.00	0.02
San Luis Obisp	310-ARROY-42	10:00	15.0	680	4.0	118.0		7.0	13.0	279	10	0.20	0.01
San Luis Obisp	310-LAGUN-41	10:55	21.0	0	10.0	15.0		7.5	18.0	988	203	0.00	0.01
San Luis Obisp	310-LITTLE-41	10:28	15.4	1200	5.0	120.0		7.0	15.1	794	52	0.00	0.03
San Luis Obisp	310-PENN-41	14:55		730	9.1		1.69	7.5	15.8				
San Luis Obisp	310-PICOC-41	9:33	15.4	700	6.0	120.0		7.0	15.2	988	98	0.00	0.01
San Luis Obisp	310-SANSI-41	11:12	15.0	1130	5.0	120.0		7.5	11.0	19863	63	13.00	0.88
San Luis Obisp	310-SANTA-41	10:05	16.0	870	7.0	120.0		8.0	10.0	1259	85		0.03
San Luis Obisp	310-SBE-41	10:30		850	9.6		0.71	7.5	13.3	4611	556	0.30	0.15
San Luis Obisp	310-SYB-41	9:45		25000	13.3		12.9	8.0	17.6	3255	74	1.60	0.20
San Luis Obisp	310-UCF-41	10:00		920	10.2		0.62	7.5	13.5	4352	75	3.80	0.39
San Mateo	202-ALPIN-11	11:00	12.5	1050	9.6		5	7.5	10.7	382	31	0.04	0.06
San Mateo	202-BUTAN-11	11:05	10.3	400	9.6	97.4		7.0	11.5	987	10	0.62	0.05
San Mateo	202-CALER-11	12:09	14.5	440	8.8	120.0		7.0	14.0	1650	10	0.03	0.05
San Mateo	202-CALER-12	11:40	15.0	730	6.0	120.0		7.0	13.5	2481	166	1.72	0.26
San Mateo	202-DENNI-11	12:25	16.0	300	8.2		5	7.0	12.0	1079	218	0.16	0.05
San Mateo	202-FRENC-11	11:45	15.5	330	9.5		10	6.5	12.9	862	175	0.41	0.05
San Mateo	202-GAZOS-11	14:30	18.0	500	10.0	122.0		7.0	18.0	384	74	0.01	0.05
San Mateo	202-GAZOS-13	13:00	16.0	300	10.1	122.0		7.0	11.0	309	10	0.01	0.05
San Mateo	202-GAZOS-15	13:35	16.0	300	9.3	122.0		7.0	12.0	285	10	0.01	0.05
San Mateo	202-LAHON-11	10:20	11.0	900	10.0		5	7.0	9.4	1956	529	0.01	0.05
San Mateo	202-LOBIT-11	10:30	10.0	1100	9.6		10	8.5	8.5	663	228	0.02	0.05
San Mateo	202-MARTI-11	9:10	11.0	200	8.2		10	7.0	12.0	158	20	0.07	0.05
San Mateo	202-MILLC-11	12:43	20.7	800	9.4		5	7.5	13.3	1956	10	0.08	0.05
San Mateo	202-MONTA-11	10:20	14.0	400	8.1		20	7.0	12.0				0.05
San Mateo	202-MONTA-12	10:50	14.0	500	7.6		15	7.0	12.0	2178	282	0.10	0.05
San Mateo	202-PESCA-11	11:53	10.8	600	11.0	122.0		7.0	15.0	823	197	0.19	0.05
San Mateo	202-PILAR-11	10:30	15.1	480	8.4		5	7.0	12.3	1187	624	0.01	0.05
San Mateo	202-POMPO-11	12:55	20.1	7200	9.0	64.6		7.0	16.0	432	148	0.04	0.05
San Mateo	202-PURIS-11	9:35	9.5	710	9.4		5	8.5	9.5	727	691	0.01	0.05
San Mateo	202-SANGR-11	11:40	10.5	1700	9.2		10	8.5	16.0	529	226	0.01	0.05
San Mateo	202-SANGR-12	10:30	12.6	830	9.8		5	7.0	11.3	882	733	0.01	0.05
San Mateo	202-SANGR-14	9:15	9.7	600	10.0		5	7.5	9.0	292	31	0.01	0.05
San Mateo	202-SANPE-11	9:00	13.5	470	9.2	120.0		7.0	11.5	1789	148	0.26	0.05
San Mateo	202-SANPE-12	10:43	13.0	290	9.6	120.0		7.0	10.5	359	74	0.05	0.05
San Mateo	202-SANPE-13	9:55	14.5	470	8.8	120.0		7.0	12.5	1850	135	0.10	0.05
San Mateo	202-SANVI-11	11:45		300	9.2		5	7.0	12.0	1918	382	0.23	0.05
San Mateo	202-TUNIT-11	11:05	11.0	800	10.0		5	8.5	9.5	197	121	0.01	0.05
San Mateo	202-WHITE-11	12:30	18.0	300	10.0	122.0		7.0	11.0	292	31	0.01	0.05
San Mateo	202-WHITE-12	10:00	15.0	300	9.8	90.2		7.0	11.0	1401	74	0.05	0.05
Santa Cruz	304-APTOS-21	13:45	14.5	750	10.5		0	7.5	13.0	1918	63	0.05	0.05
Santa Cruz	304-ARANA-21	11:54	18.5	520	9.0		15	6.5	11.0	19836	158	0.44	0.05
Santa Cruz	304-ARANA-22	10:40	17.0	1990	8.0		20	7.0	14.0	6136	1236	0.79	0.05
Santa Cruz	304-ARANA-23	12:58	17.5	370	9.0		0	7.0	11.0	1430	145	0.16	0.24
Santa Cruz	304-ARROY-21	12:05	17.0	500	9.4	120.0		7.0	13.0	2359	110	0.32	0.05
Santa Cruz	304-ARROY-22	10:30	16.0	500	8.4	74.0		7.0	16.0	12033	708	0.95	0.05
Santa Cruz	304-ARROY-23	12:20	22.5	600	9.8	122.0		7.0	19.0	17329	158	1.64	0.05
Santa Cruz	304-BRANC-21	15:20	24.0	510	12.9		5	8.0	22.0	3654	521	0.13	0.05
Santa Cruz	304-BRANC-22	10:25	14.0	600	9.6	120.0		7.5	11.0	2063	233	0.26	0.05
Santa Cruz	304-BRANC-23	11:45	17.0	510	10.0	120.0		7.5	12.0	2247	231	0.26	0.05
Santa Cruz	304-BRANC-24	10:12	15.5	580	10.0		0.5	6.5	10.1	1664	364	0.30	0.05
Santa Cruz	304-BRANC-25	12:00	17.3	600	10.0		0.5	7.0	11.5	2413	173	0.20	0.05
Santa Cruz	304-CARBO-21	12:15	19.0	350	9.6	120.0		7.0	13.5	3488	288	0.36	0.05
Santa Cruz	304-CORCO-21	10:30	16.0		10.0	31.4		7.0	13.0	24192	6867	0.05	0.05
Santa Cruz	304-CORCO-22	11:23	19.5	1450	5.5	55.6		7.0	14.0	24192	2909	0.05	0.05
Santa Cruz	304-FERRA-21	11:43		430	10.0	122.0		6.5	11.3		631	0.05	0.05
Santa Cruz	304-GRANI-21	13:00	17.5	480	10.0		0.5	7.0	11.5	1785	197	0.52	0.05
Santa Cruz	304-LAGUN-21	11:50	16.5	500	9.8	120.0		6.5	11.5	906	85	0.16	0.05
Santa Cruz	304-LIDEL-21	13:23		390	9.4	122.0		6.5	11.2	1793	31	0.99	0.05
Santa Cruz	304-LITTL-21	11:35	13.0	360	7.8	120.0		7.0	11.0	450	0	0.09	0.05
Santa Cruz	304-MAJOR-21	12:18	14.0	410	10.0	120.0		6.0	10.0	455	63	0.25	0.05
Santa Cruz	304-MOLIN-21	10:39		310	10.0	122.0		6.5	10.1	2247	52	0.33	0.05
Santa Cruz	304-MOORE-21	16:30		400	5.3		0	7.0	20.5				
Santa Cruz	304-MOORE-22	11:30	17.0	300	6.2	120.0		7.0	12.5	1291	20	0.48	0.05
Santa Cruz	304-MOORE-23	12:30	17.0	300	8.4	120.0		7.0	11.5	2359	52	0.27	0.05
Santa Cruz	304-MOORE-24	13:15	21.0	400	8.2	122.0		7.0	13.0	3873	3654	0.05	0.05
Santa Cruz	304-MOORE-25	10:35	16.5	400	8.0	78.9		7.0	11.0	2063	226	0.21	0.05
Santa Cruz	304-MOORE-26	16:00	28.0	1600			5	7.0	24.0	2481	223	0.05	0.05

Attachment 3: Results by County/Station cont. (Yellow represents exceedance of WQOs)

County	StationID	Sample Collection Time	AirTemp (Deg C)	Conductivity (µS)	Dissoved Oxygen (ppm)	Transparency (cm)	Turbidity (JTU)	pH	Water Temp (Deg C)	Total coliform (MPN/100ml)	E. coli (MPN/100ml)	Nitrate-N (mg/L)	Orthophosphate-P (mg/L)
Santa Cruz	304-NEWYE-11	10:34		430	8.9	122.0		7.0	11.6	2143	20	0.73	0.05
Santa Cruz	304-ROBSC-21	12:10	22.5	180	5.6	89.6		7.0	15.0	24192	1126	0.83	0.05
Santa Cruz	304-SANLO-21	10:07	16.0	690	9.2		10	7.0	14.0	3873	246	0.34	0.05
Santa Cruz	304-SANLO-22	13:56	19.0	1990	9.9		5	7.5	17.0		187	0.05	0.00
Santa Cruz	304-SANLO-26	12:53	19.0	400	11.5		2.04	7.0	15.9	1585	31	0.53	0.05
Santa Cruz	304-SANLO-27	10:55	17.0	398	11.1		1.56	7.0	11.2	1723	350	0.24	0.05
Santa Cruz	304-SANVI-21	12:33		350	10.0	122.0		6.5	11.0	259	10	0.13	0.05
Santa Cruz	304-SCOTT-21	10:45	15.0	260	9.0	120.0		7.0	12.0	556	108	0.05	0.05
Santa Cruz	304-SCOTT-22	11:15	15.0	210	6.7	220.0		7.0	11.0	428	195	0.07	0.05
Santa Cruz	304-SCOTT-23	12:33	20.0	380	6.2	120.0		7.0	12.0	2143	63	0.05	0.05
Santa Cruz	304-SCOTT-24	13:45	16.0	220	7.2	120.0		7.0	12.0	1565	31	0.07	0.05
Santa Cruz	304-SCOTT-25	14:20	14.5	550	7.5	120.0		6.5	14.5	813	74	0.05	0.05
Santa Cruz	304-SCSD2	12:20	30.0	750	8.2		0	7.0	16.5	6586	2063	4.42	0.05
Santa Cruz	304-SCSD3	13:45	28.0	500	8.6		5	7.0	15.5	14136	85	2.13	0.05
Santa Cruz	304-SCSD4	10:18	16.5	690	8.8		5	7.5	15.0	24192	2014	3.72	0.05
Santa Cruz	304-SOQUE-21	10:10	16.0	720	4.1	120.0		7.5	12.0	1076	52	0.05	0.05
Santa Cruz	304-SOQUE-22	11:30	16.5	1990	3.9	120.0		7.5	15.0	2700	1250	0.35	0.05
Santa Cruz	304-VALEN-21	12:07	16.0	630	10.6		5	7.5	11.0	565	63	0.13	0.05
Santa Cruz	304-VALEN-22	16:00	21.0	530	10.1		0	7.5	13.5	2909	471		0.05
Santa Cruz	304-WADDE-21	12:11	18.5	130	9.6	122.0		6.5	13.2	988	109	0.08	0.05
Santa Cruz	304-WADDE-22	13:55		340	9.4	122.0		7.0	13.8	1401	20	0.07	0.05
Santa Cruz	304-WILDE-21	10:02	12.0	500	10.8	120.0		6.5	10.0	2481	63	0.32	0.05
Santa Cruz	304-WILDE-22	11:15	15.0	510	10.0	120.0		6.5	10.0	1664	146	0.30	0.05
Santa Cruz	304-ZAYAN-21	12:10	18.0	440	10.2		1.63	7.0	12.8	1476	145	0.60	0.05
Santa Cruz	304-ZAYAN-22	11:35	18.0	570	10.0		1.74	7.0	11.5	1198	86	0.18	0.05
Santa Cruz	305-BEACH-21	11:30	16.5	3200	10.0		5	7.0	16.0	1585	31	0.05	0.05
Santa Cruz	305-CORRA-21	12:25	21.0	700	9.8		0	7.0	13.0	146	3448	0.05	0.05
Santa Cruz	305-CORRA-22	13:05	19.0	500	10.4		0	7.0	11.5	443	4106	0.05	0.05
Santa Cruz	305-HARKI-21	10:10	15.5	600	11.0		25	7.0	18.5	14136	2909	0.05	0.05
Santa Cruz	305-HARKI-22	12:40	17.5	700	3.0		5	7.0	15.0	24192	74	3.94	0.34
Santa Cruz	305-HARKI-23	11:25	17.0	400	9.4		10	7.0	11.0	14136	249	0.72	0.05
Santa Cruz	305-PAJAR-21	13:14	22.0	1300	6.0		5	7.0	18.0	1789	96	7.08	0.21
Santa Cruz	305-STRUV-21	10:45	20.0	300	9.2		0	7.0	19.0	3654	10	0.16	0.05
Santa Cruz	305-STRUV-22	11:50	18.0	500	3.4		0	7.0	16.5	4611	31	0.05	0.05
Santa Cruz	305-WATSO-21	12:20	18.0	400	3.6		0	7.0	15.5	1585	31	0.27	0.05
Santa Cruz	305-WATSO-22	12:22	17.5	700	3.0		5	7.5	15.0	24192	5	0.15	0.76
Santa Cruz	305-WATSO-23	10:36	13.5	12400	8.0		10	7.5	17.0	24192	238	11.69	0.05
Santa Cruz	305-WSTRU-21	11:20	13.5	500	7.0		10	6.5	11.0	10462	413	0.28	0.05