



**SPAWN/RWQCB Citizen Water Quality Monitoring
Program**

Winter 2004/05 Report

Prepared by

The Salmon Protection and Watershed Network

Paola Bouley, Watershed Biologist

Shannon Burke, Water Quality Monitoring Crew Leader

Tom Yarish, Water Quality Monitoring Crew Leader

And,

**Pacific Coast Science and Learning Center,
Point Reyes National Seashore**

Joseph Kinyon, Biodiversity & GIS Database Manager

*Pacific Coast Science and Learning Center - National Park
Service*

June, 2005

Introduction

The Salmon Protection and Watershed Network (SPAWN) in partnership with the Regional Water Quality Control Board and State Water Resources Control Board is currently assessing water quality in the Lagunitas Creek Watershed as part of an effort to determine Total Maximum Daily Loads (TMDL) for pollutants. The Lagunitas Watershed is currently listed on the RWQCB 303(d), "Impaired Water Body List" because levels for certain pollutants (including sediments, nutrients, and fecal coliforms) exceed the State of California's water quality standards. The current program will locate problem areas and evaluate the current pollutant levels.

Methods

All sites were sampled according to protocols outlined in the "Lagunitas Watershed Citizen Water Quality Monitoring Program Volunteer Manual (SPAWN/RWQCB)." Trained water quality monitoring volunteers collected water samples for lab analysis. All water samples were collected between 09:00 and 13:00 hours. SPAWN volunteers also collected physical data using portable test equipment.

Sampling Schedule. Ten sites were sampled for all parameters listed below on November 4th, 11th, 17th, and December 2nd, and 8th. See Appendix B - Location Map of Sampling Sites. In addition, fecal coliform samples were collected once weekly over a five-week period in February 2005 at all sites except # 31 Lagunitas creek below Jewell.

Sampling Sites (Numbers indicate RWQCB site identification codes provided by Farhad Godhrati).

Fecal Coliforms

- WS-19 Woodacre Creek
- WS-18 East fork Woodacre Creek
- WS-17 West Fork Woodacre Creek
- WS-23 San Geronimo Creek at the Inkwells
- WS-24 Lagunitas Creek below Devil's Gulch Creek
- WS-25 Lagunitas creek below Cheda Creek
- WS-26 Lagunitas creek below Jewell
- WS-20 San Geronimo Creek at Roys Pools
- WS-22 Arroyo Creek
- Montezuma Creek

Nitrate + Nitrite and Orthophosphates

- WS-19 Woodacre Creek
- WS-18 East fork Woodacre Creek
- WS-17 West Fork Woodacre Creek
- WS-23 San Geronimo Creek - Inkwells
- WS-24 Lagunitas Creek below Devil's Gulch Creek
- WS-25 Lagunitas creek below Cheda Creek
- WS-26 Lagunitas creek below Jewell
- WS-20 San Geronimo Creek (Roys Pools)

Sequoia Lab Analyses. Fecal coliforms, nitrate + nitrites (NO₃ + NO₂), ortho-phosphates.

SPAWN Field Measurements. PH, Dissolved Oxygen (DO), Conductivity (μ S)
Temperature ($^{\circ}$ C).

Final water quality data for November/December 2004 were integrated into a geographic information system (GIS) project designed by GIS specialist Joseph Kinyon at the Pacific Coast Science and Learning Center Staff.

Results and Discussion

See Appendix B - Data Maps; And, CD which includes GIS project, data sheets, and PowerPoint presentation materials.

Fecal coliform levels have an acceptable recreational swimming level of 200 MPN/100mL. There are currently no established limits for nitrates and orthophosphates in the Lagunitas Creek Watershed. Furthermore, there are no data on standards for conductivity, pH, temperature and dissolved oxygen. Therefore, these data will help to determine background levels in the Lagunitas Creek Watershed and ultimately help define limits for each parameter.

Sixty-seven percent of samples ($n= 58$) analyzed for fecal coliforms in the Lagunitas Creek Watershed exceeded the State recreational swimming level of 200 MPN/100 mL ($n= 58$ samples, 10 sites). All sites samples exceeded 200 MPN/100 mL at least once over the 30 day sampling period. The highest level of fecal coliforms occurred at the Inkwells/San Geronimo Creek site (WS-23) at 16,000 MPN/100 mL (mean = 3832.0 MPN/100 mL, $n = 5$). Woodacre Creek (WS-19) exceeded the State level four out of five times (mean = 1541.6 MPN/100 mL, $n=5$). The highest levels of nitrates were detected on Montezuma Creek (WS-21) (only one sample date available), followed by Woodacre Creek, and East Fork Woodacre Creek (WS-18) and the Inkwells/San Geronimo. No nitrogen and orthophosphate data were received from Sequoia Analytical for Arroyo Creek (WS-22), and no data were received for four out of five sample dates on Montezuma Creek.

The Inkwells/San Geronimo site (WS-23) is on State Park lands and occurs directly downstream of a reach of creekside homes (including some dilapidated homes that may have failing septic systems). Woodacre Creek drains through the village of Woodacre, one the most heavily urbanized areas in the San Geronimo Valley sub-watershed. The Woodacre Creek sampling station (WS-19) occurs upstream of the two equestrian centers on San Geronimo Creek indicating that the high fecal coliforms and nutrients at this site are probably a result of leaking septic systems. The Roy's Pools sampling station (WS-20) located immediately downstream of the San Geronimo Valley Golf Course is also the closest site sampled downstream of two horse ranches. This site exceeded State fecal coliform levels two out of five times (Mean = 433.6, $n=5$).

Fecal coliform data in Jan/february 2005 collected by SPAWN volunteer Tom Yarrish was compiled and analyzed by Farhad Godhrati (RWQCB). See Appendix C.

Acknowledgements

This project would not have been possible without a grant from the U.S. EPA and Regional Water Quality Control Board (RWQCB) 319h Citizen Monitoring Program.

Several individuals devoted many hours to the success of the field sampling and creation of this document. Tom Yarish (SPAWN Water Quality Crew Leader and GIS enthusiast) spent many hours working on the creeks to collect water quality data and samples, and led and outreach effort which resulted in the GIS partnership with the Pacific Coast Science and Learning Center. Joseph Kinyon (Biodiversity & GIS Database Manager) integrated all our data into a GIS project and produced the excellent maps included with this report as well as a GIS project template that can be utilized for future water quality reporting efforts. Shannon Burke (SPAWN Water Quality Crew Leader) helped organize and plot all the data presented in this report. Peter Krottje, Dale Hopkins, and Farhad Ghodrati (RWQCB) all provided valuable support for structuring this report.

Thank you to all the volunteers who have made this program a success!

This project has been funded wholly or in part by the USEPA Assistance Agreement. The contents of this document do not necessarily reflect the views and policies of the USEPA, the State, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.”

APPENDICES

A. Sampling Site Location Map

B. Nov/Dec Water Quality Data

C. Jan/Feb Water Quality Data