

The Plight of the Western Pond Turtle in Our Watershed

Dr. Nick Geist and Dr. Christina Sloop

Along many of the Laguna watershed creeks and waterways you may be lucky enough to catch a brief glimpse of an olive green, rather ordinary looking turtle. After seeing a blur of dark color you'll hear a quiet "plop" as the turtle slips from its sunny perch on a fallen tree limb or rock into the water.

You have likely witnessed a western pond turtle (*Clemmys marmorata*), the only native freshwater turtle in western north America, that was once common all along the West Coast. Western pond turtles are now virtually nonexistent in other parts of their former range throughout the West. Young turtles especially are becoming a rare sight in Sonoma County.

Why is our only native turtle disappearing? In the last 50 years, these ultimate survivors are facing catastrophe all over the globe. Many of the more than 300 turtle species are in danger of extinction, and if we humans aren't careful, they will disappear not with a noisy bang, but a quiet whimper – and it will be our fault.

Just a few decades ago pond turtles were still fairly common in waterways all over Sonoma County. Go back even further and there were literally millions of them. Back in the late 19th century when Cotati was an enormous marsh and ideal habitat for these aquatic reptiles, they were so numerous that more than 20,000 turtles were harvested every year from Sonoma County (for turtle soup!).

As development drained the marshes and ponds in the 20th century, hundreds of thousands more were left homeless. It is now at the point that without intervention, they will probably vanish from our creeks in another few decades, and we will be left with a world without turtles.

The Laguna Foundation Science program is partnering with Sonoma State University's Department of Biology to gather the necessary funding to determine just how serious the status of these turtles is in our watershed. Our crew, so far, includes a SSU graduate student and a dedicated group of undergraduates. We are working to provide a solution by gathering basic information about our local turtles - how many there are, how old they are and why they are not breeding successfully.



Western Pond Turtle (*Clemmys marmorata*)
Photo: James Bettaso, U.S. Fish and Wildlife Service

What we have learned to date is that when a female digs a nest and lays her eggs, predators like raccoons and skunks dig them up and eat most of them. Those who survive then have to deal with another common voracious predator - non-native bullfrogs.

Ultimately our goal is to undertake a turtle "head-start" program, where turtles will be hatched from eggs gathered from around the county, and raised until they are big enough to fend off the native and introduced predators that are decimating them. Once large enough, we'll release the young turtles back into the wild. It's a start, and maybe kids growing up today won't have to tell their children about those weird and wonderful animals that they used to see back when they were kids.

If you would like to underwrite this important project please contact Laguna Foundation Research Director Dr. Christina Sloop, 527-9277x.101 or email: christina@lagunafoundation.org. The Laguna turtles will thank you!!!

Dr. Geist is an Associate Professor of Biology at Sonoma State University. He has been working on the reproductive and metabolic physiology of dinosaurs, birds, crocodiles, and turtles for the past 15 years.

Executive Director's Report

Dan Schurman



In the past few months, we at the Foundation have spent a lot of time looking ahead. While we've always had a clear idea about where we are heading, much of our work these past few years has been to establish a credible reputation for the Foundation and in turn raise awareness for the needs of the Laguna. There's still a lot to do, but we have a better chance for success because of the foundation we've laid and the work we've done recently in formalizing an action plan.

A little over a year ago we published "Enhancing and Caring for the Laguna", also known as our Restoration and Management Plan (RMP). While the RMP was effective in laying out a grand vision for the Laguna and documenting its challenges, the next step was to describe specific projects and actions necessary to realizing that vision of a fully functioning and thriving Laguna ecosystem, complete with restored habitats, improved water quality and flood retention capacity, well-managed preserve lands, ample opportunities for responsible public access, and a scientific program for assessing and informing the effectiveness and impacts of the above. All housed, of

course, in the Laguna Learning Center, a physical headquarters for the Foundation and the community's efforts to fully embrace the natural treasure at the heart of this place we are blessed to call home.

Some of these projects are continuations of current efforts, such as permanent restoration in the project areas of the Ludwigia Control Project, additional phases of the Middle Reach Restoration Project and ongoing efforts to restore the riparian vegetation along currently denuded channels and tributaries of the Laguna. Others will provide us with basic data needed to inform our work and help us to understand the Laguna's needs, such as species surveys in vernal pools of the Santa Rosa Plain, baseline bird counts in wild areas of the Laguna, and ongoing research into pollutant sourcing and the dynamics of water quality throughout the watershed. The Work Plan is a living document, however, and will change depending on opportunity, availability of willing landowner partners, funding and other variables.

An overview of the Work Plan is posted on the Foundation's website at www.lagunadesantarosa.org/programs_five_year_plan.shtml. The chart below shows the evolution of the Foundation's activities since our founding, including projected activities in the Work Plan.

	1989-2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011-15
Organizational Development											
State of the Laguna Conferences	1989										biannually
Broad-based board of directors											
Stakeholder agency partnerships											
Growing donor and volunteer support base											
Professional staff											
Engage Laguna landowners											
Develop Laguna Learning Center											
Develop Prioritized 5-Year Project Work Plan											
Formalize Laguna Stakeholder Council											
State of the Laguna annual report											
Endow Learning Center & core programs											
Programs and Projects											
Education											
Laguna Docent circle & training program	From 1999										
Learning Laguna science education program	From 1999										
Docent-led Community Walks for all ages											
Public Education Programs											
Restoration											
Swale and Hummock Restoration Project	From 2000										
Ludwigia Task Force & Control Project											
Restoration and Management Plan											
Middle Reach Restoration Project Phase I											
Cotati Creek Critters Restoration Partnership											
Laguna Wildlife Area Restoration Project											
Riparian Enhancement Program											
Southern Laguna Enhancement Project											
Middle Reach Restoration Project Phase II											
Scientific Research											
Prioritized Scientific Research Plan											
Laguna Science Advisory Committee											
Research Initiatives per IDed priorities											

Introducing... Laguna Learning Adventures

Christine Fontaine, Director of Education Programs

Ahh... Spring in the Laguna... Winter waters have percolated, evaporated and flowed, trees are leafing out, flowers are blooming, insects are emerging and some are pollinating, birds are nesting, reptiles are active in the warmth, mammals are being born and reared—daylight, sustenance and shelter abound for every species. Let's take a hint from nature, wake from the darkness of winter and get outside to explore! We hope you will consider joining us for one of our Laguna Learning Adventures.

Here is a highlight of a few upcoming events:

The Laguna Learning Adventures schedule through August plus online registration are available on our website.

**Introduction to the Laguna
with Christina Sloop, PhD, Joe Honton & Julian Meisler
Saturday, March 15 ♦ 2:00 - 6:00 PM ♦ \$25 per person**

Join Laguna Foundation staff for an introduction to the natural history of the Laguna, including restoration and scientific research currently underway. We will start in the classroom then continue our learning in the field as the afternoon light fades into evening.

**Bugs to Butterflies - Insects of the Laguna
with Frédérique Lavoipierre
Saturday, April 12 ♦ 9 AM - 1 PM ♦ \$25 per person**

From pollinators to decomposers, predators to prey, insects are important. Come learn about some of the insects of the Laguna and the diverse roles various species play in the ecosystem. We will look for critters in the field (and in the water!) and Frédérique will also share some of the mounted specimens from the Sonoma State Biology Department.

**Alpha Wildlife Area Rookery
with Laguna Docents
Wednesday, April 16 ♦ 5:30 - 7:30 PM ♦ \$10 per person**

Alpha Farm Wildlife Area has beautiful views of the Laguna and a rookery with great blue herons and double crested cormorants. This evening will be a great opportunity to explore this City of Santa Rosa's property with Laguna docents as the day fades and the birds are busily preparing for the night.

**Vernal Pools of the Santa Rosa Plain
with Christina Sloop, PhD
Saturday, April 26 ♦ 9 AM – 1 PM ♦ \$25 per person**

The unique environment of vernal pools provides habitat for numerous rare plants and animals that are able to survive and even thrive in the harsh environment of fluctuating wet and dry conditions. Join us to learn about these amazing and seemingly ephemeral phenomena.

This new collection of walks and classes is designed to connect people to the Laguna—to help individuals increase personal knowledge of the Laguna and foster a sense of place. Some are docent-led favorites; others will be led by naturalists and scientists. Please see our website for the full class descriptions and registration information. Know that once we receive your registration, information regarding where to meet and what to bring will be emailed to you. We'll see you in the field!

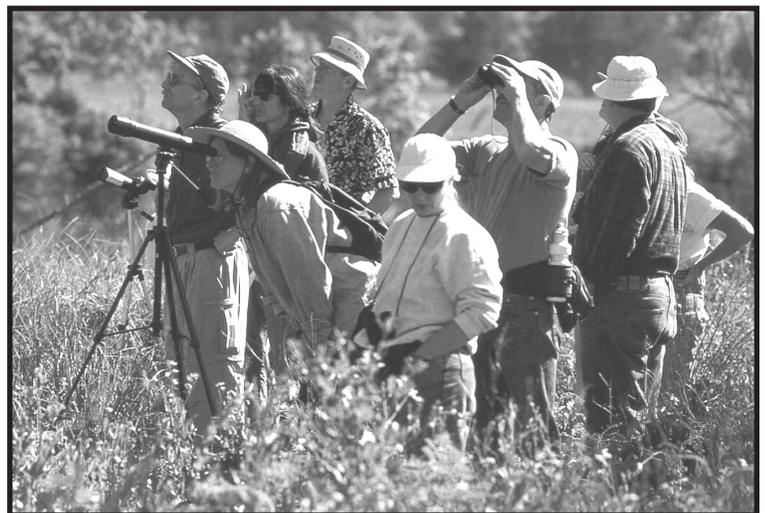
**Delta Pond Rookery
with Laguna Docents
Saturday, May 3 ♦ Several time slots ♦ \$10 per person**

This annual event is not to be missed! The trees between Delta Pond and the Laguna are host to a sizable rookery of great blue herons, double crested cormorants, plus great egrets with their wispy breeding plumage. Come watch the adults endeavoring to keep up with demanding chicks who are trying to out-compete nest-mates and prepare for first flight.

This event benefits the Learning Laguna bus scholarship fund.

**Wetland Topography – Swales & Hummocks
with Denise Cadman
Saturday, May 17 ♦ 9 AM - Noon ♦ \$20 per person**

Seemingly flat stretches of the Santa Rosa Plain are actually subtly contoured. Sometimes depressions in the land form isolated pools, other times, the depressions are connected by swales. Hummocks are the slightly elevated clumps of vegetation or soil. Come learn how the landscape effects the movement of water and what it all means to the plant and animal life of the area.



Birdwatchers at the Delta Pond Rookery
Photo: Laguna Foundation Staff

Laguna Learning Center Project Update

Wayne Mitchell, Director of Campaigns and Individual Giving

We encourage you, if you haven't done so recently, to take a look at our site on Occidental Road at Sanford. We've made much progress in the past year. The restoration of the old farmhouse, part of Phase I of construction, is nearly complete on the exterior, with a new roof, windows, and foundation, restored woodwork and trim, and a fresh coat of white paint. In addition, crews did significant work on preparation of the site, establishing utility access, and laying down a new gravel driveway and parking areas.

Now that the farmhouse is weather-tight, we are slowing construction work for the winter months. We have yet to raise the final funds needed to complete Phase I, and we have always undertaken this project on a "pay-as-we-go" basis.

Our finance and project committees have analyzed what is required to finish Phase I and begin construction on Phase II, which is the Learning Center structure itself. Recall that the California State Coastal Conservancy reserved \$700,000 for the Learning Center last year. The Conservancy wishes for this funding to be used for construction of the Learning Center structure. When we are ready to start Phase II construction, with reviewed and approved plans, we can apply to the Conservancy board to release these funds. The funds have been placed in a reserve account for us, and we can rely on it being available at the appropriate time.

Before we can access these Conservancy funds, we need to complete construction of Phase I, finalize drawings for Phase II, and secure permits and CEQA review. Getting us to the point to qualify for the \$700,000 requires approximately \$1,000,000 in new gifts and pledges. Our 13-member Campaign Committee is working hard to reach this milestone within 2008.

Cunningham Marsh Restoration

Joe Honton, Watershed Outreach and Database Manager

Many of us know that too much fertilizer is not good for plants, but members of the California Native Plant Society have been putting that sage wisdom to the test at Cunningham Marsh.

During this past autumn and winter volunteers from throughout the county have converged on Blucher Creek – a tributary of the Laguna – to carry out an important aspect of Cunningham's restoration and management plan: the installation of nutrient absorbing hedgerows. These specially designed hedgerows are aligned parallel to the creek and directly upland from the marsh habitat. In all, there are five hedgerow sections: three "at-risk" sections along the west side and two "preventative" sections along the east side.

Native species – specially propagated from cuttings and seeds taken from parent plants at the marsh – have been chosen both for their intrinsic habitat value as well as for their ability to absorb fertilizers running off the adjacent neighboring properties. The species being planted include: coyote bush, coffeeberry, toyon, hawthorn, rush, wax myrtle, and California blackberry.

At stake are the rare Pitkin Marsh lilies, still growing wild at the Cunningham and Pitkin marsh, but found nowhere else in the world. Like most tiger lilies, the Pitkin Marsh lily has adapted through evolution to moist, shady, low-nutrient conditions. The year-round water seeps – just upstream of this site – keep soil moisture conditions at an

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optimal stage, while the intermixed azaleas and hawthorn provide both shade and structural support. But the historic low-nutrient soils have recently been shifting to high-nutrient soils due to changing land use around the marsh. The newly planted hedgerows are an experiment to see if the soil pH can be lowered enough to revitalize the former acid-loving plant conditions that created this upland marsh.

This project has been sponsored by the Milo Baker chapter of the California Native Plant Society and funded through a grant provided by the City of Santa Rosa. Plant propagation and restoration technical support has been done by Circuit Rider Productions. Almost all of the actual work of weeding, site preparation, planning and planting has been done by a dedicated core of professionals who have volunteered their services. Additional voluntary contributions have come through five restoration planting days with participation from: the FARMS Leadership Program (high school agriculture students) sponsored by the Southern Sonoma County RCD; college students from the Department of Environmental Studies and Planning at Sonoma State University; college students from the Watershed Ecology and Restoration class at the Santa Rosa Junior College; CNPS restoration volunteers; and the Laguna Foundation's LagunaKeepers.

The hedgerow experiment will test the wisdom of the sages. But while that's happening other important habitat management work will continue at the site – stay tuned, and be sure to join us at one of our next volunteer work days. Who knew that cleaning our water could be so much fun?

LagunaKeeper Events

LagunaKeepers are the Foundation's habitat restoration volunteers. Each month, in partnership with the City of Santa Rosa, we meet to give the Laguna a little hands-on love! This can mean fence removal, willow sprigging, weed control, or planting, depending on the site and the time of year.

Keepers meet at locations throughout the Laguna, but workdays are most always on a Saturday from 9am to noon. Tools, gloves, and snacks are provided, plus plenty of fresh air and camaraderie. **Only heavy rain cancels** LagunaKeeper events – check with us for rain dates.

Spring is our busiest season and there are lots of opportunities to participate. Our last workday before the summer break is on May 10th. Join us & become a part of the Laguna's future!

March 9 (Sunday) ♦ Cunningham Marsh

Join volunteers from the California Native Plant Society and the Laguna Foundation as we plant native trees and shrubs at Cunningham Marsh. RSVP to Joe Honton, 527-9277x105 or email: joe@lagunafoundation.org, for directions and carpooling info. Limited to 12 volunteers total.

March 15 ♦ Windmill Creek

Previous work on Windmill Creek began establishing a tree canopy. Now to the next reach! Meet at the Brown Farm gate: 2200 Llano Rd. just north of Grab 'n Grow.

April 5 ♦ Laguna Uplands

A maintenance and planting day at this well-established site. Bring your camera for one of the best views of the Laguna in the county! Enter at Palm Ave., just south of Palm Drive Hospital off Petaluma Ave. in Sebastopol.

April 19 ♦ Meadowlark Oak Savana

Phase One of the exciting extension of the Middle Reach Restoration Project to Sebastopol's Meadowlark Field. Meet at the Chevron station just east of the Hwy. 12 bridge.

April 22 (Tuesday) ♦ Special Earth Day Gathering

Check our website for more information.

May 10 ♦ Meadowlark Riparian

Phase Two at Meadowlark Field, where we'll plant a diversity of riparian tree and shrub species. Meet at the Chevron station just east of the Hwy. 12 bridge.

For more information or for monthly reminders of LagunaKeeper work dates, please contact Catherine Cumberland, 527-9277x.108 or email: catherine@lagunafoundation.org

Cotati Creek Critter Events

INSIDE/OUTSIDE NATURE EDUCATION SERIES

Sunday, April 6 ♦ 9 AM - 11 AM Spring Bird Walk Along the Laguna in Cotati



With John Dell'Oso of Point Reyes
National Seashore

Meet by the statue of the accordion player in La Plaza Park, Cotati (Old Redwood Hwy. & W. Sierra Ave.)

Saturday, April 26 ♦ 10 AM - Noon Getting to know the Laguna de Santa Rosa watershed: Fairfield Osborn Preserve.

Limited to 12 participants. Call the Preserve office at 795-5069 for reservations. To carpool from Cotati at 9:15am, contact Jenny Blaker, 792-4422 or email: jenny@creeks.cotati.info.

Sunday, May 4 ♦ 10 AM - 1 PM Putting the Grass in "Grass-roots" Restoration

With Wade Belew, Stewardship Coordinator, Cotati Creek Critters
Meet at La Plaza Park, Cotati (Old Redwood Hwy. & W. Sierra Ave.)

Monday, June 2 ♦ 6 PM - 8 PM

Creeks Bike Ride Exploring Cotati and Rohnert Park

With Wade Belew, Stewardship Coordinator, Cotati Creek Critters
Meet at La Plaza Park, Cotati (Old Redwood Hwy. & W. Sierra Ave.)

COMMUNITY PLANTING DAYS - PLEASE JOIN US!

We will continue to plant native trees, shrubs and an understory of native grasses, sedges and rushes along the Laguna de Santa Rosa. Other tasks include weeding and mulching to maintain existing plants, plant propagation and other tasks in the plant nursery.

For all planting days meet at "Ladybug Lot," Cotati City well lot #2 on Lakewood Ave.

Saturdays ♦ 9 AM - Noon

March 8

April 12

May 10

Sundays ♦ 10 AM - 1 PM

March 30

April 27

For more information about the Inside/Outside Series or Cotati Creek Critter Planting Days, please visit www.CotatiCreekCritters.info or contact Jenny Blaker, 792-4422 or email: jenny@creeks.cotati.info.

The Cotati Creek Critters is a fiscally sponsored project of the Laguna de Santa Rosa Foundation.

Middle Reach Restoration Project Growing Like a Weed

Catherine Cumberland, Restoration Program Assistant

Restoration acreage on the Middle Reach project has more than doubled since our last newsletter. To our initial 10 acres, we've added 12 acres of oak woodland restoration on Kelly Farm, and begun work on another 11 acres (a mix of riparian and oak savanna) on Sebastopol's Meadowlark Field. This expansion was only possible with the help of numerous important contributors. To all who helped out, thank you! This project is inspiring proof of the power of community collaboration.

Work began in November when volunteers established hundreds of acorn and buckeye plots on a hillside at Kelly Farm. Each acorn plot received five acorns, weed suppression, and a dose of magical LagunaKeeper TLC. We'll revisit these plots this spring and thin to three trees each, eventually reducing to one tree per plot by 2010. It's wonderful to know that the hillside, with only four mature trees, is now covered with thousands of acorns ready to burst into an oak woodland.

We're happy to report that, with the exception of browse protection, these recent plantings utilize exclusively biodegradable or recycled materials. Cardboard weed suppression mats were supplied by volunteers (special thanks to Steve Ehrmann); wood chip mulch was donated by Atlas Tree Surgery, the Sonoma County Water Agency, and the City of Santa Rosa.

This project is generously funded by the State Coastal Conservancy, Wildlife Conservation Board, US Fish and Wildlife Service, and the Community Foundation Sonoma County.

In December, we were joined by the mighty California Conservation Corps. CCC crews installed 1000 more plants at Kelly, filling in our valley oak acorn plots with other oak woodland species including wild rose, native blackberry, coyote bush and black oak. In addition, the CCC established several hundred acorn plots on Meadowlark Field, jump-starting our spring planting for that area.

If you'd like to take part in transforming weedy fields into riparian forest, join our LagunaKeeper events this spring! Check our online calendar for details.



Hardy crewmembers of the California Conservation Corps
Photo: Catherine Cumberland

A Collaborative Research Plan to Achieve an Enhanced and Restored Laguna and Further Watershed Education!

Dr. Christina Sloop, Research Director

In recent weeks 28 local representatives from 20 science-oriented agencies came together as the Laguna Science Advisory Council (LSAC) to discuss a focused watershed research plan. Scientists from local and regional universities and colleges, government agencies and local non-profits interested in furthering our understanding of the many varied and unique ecosystems in the Laguna watershed have come together to address the pressing need for research on our natural systems in the face of increasing urban pressures and the expected shifts in our local climate regime due to the effects of global climate change.

The most pressing research needs include 1) assembly of a current comprehensive ecological, geographic and historical watershed picture that will allow us to determine areas of important conservation and restoration value; 2) addressing the appropriate methodology and long-term success of current and future restoration projects; 3) tackling the current impairments of Laguna aquatic resources by close monitoring of physical, chemical and biological indicators that will signal success or failure of implementing

our restoration actions, and 4) determining appropriate management strategies for our endangered and threatened resources through in-depth study of their ecology, reproduction and survival needs.

This collaborative research approach allows a more creative advance towards an enhanced and restored Laguna by including academic educational opportunities, involving undergraduate and graduate students in data gathering activities, and by involving local agency support and interest-groups.

The LSAC's first goal is to develop and publish a five-year Laguna watershed research plan. This will establish distinct avenues for professors to involve their students each semester in long-term studies, extremely important in better understanding the implications of our changing climate, and prioritize the steps ahead and rally and organize the watershed community around a common goal: a better scientific understanding of the watershed to achieve an enhanced and restored Laguna!

Thank you to our generous supporters since the last Meanderings...

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...and, of course, all
our donors, volunteers, and you.



The **Laguna de Santa Rosa Foundation**, founded in 1989, works to preserve, restore, and inspire greater understanding and appreciation of the Laguna de Santa Rosa wetland complex, which is the largest tributary of the Russian River and Sonoma County's richest wildlife area. The Foundation conducts educational programs, implements preservation and restoration projects, conducts scientific research, works with landowners and public agencies to protect and improve Laguna resources, and advocates for appropriately managed opportunities for the public to enjoy the Laguna.

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Getting a Handle on Water Quality in the Laguna

Mark Green, Associate Executive Director

In December, the Foundation released a report launching a new era in addressing poor water quality in the Laguna—a first step toward development of a control plan to address the Laguna's water quality impairments known as a Total Maximum Daily Load, or TMDL.

The Laguna is designated as impaired under the federal Clean Water Act for six pollutants—more than any other North Coast water body. They include sediment, nitrogen, phosphorus, reduced dissolved oxygen, elevated temperature and mercury. Concerns relating to poor water quality in the Laguna include urban and agricultural runoff, wastewater discharges, loss of flood control capacity due to sedimentation, and impairment of conditions for wildlife and endangered species.

But that could begin to change with the release of *The Altered Laguna*, a "conceptual model" of the Laguna's hydrology and water quality dynamics which dovetails with the Laguna Ecosystem Restoration and Management Plan published by the Foundation in 2006. The report identifies processes and management questions as well as data gaps and uncertainties of the Laguna ecosystem, and recommends next steps in developing and implementing the TMDLs.

"This report is a significant step forward," said Dr. Christina Sloop, the Foundation's Research Director. "Without this work, we would be looking at a much longer timeframe for completion of the TMDLs, and delay real improvement in the Laguna's water quality."

Matt St. John, lead staff for the Regional Water Board's TMDL Unit, said "We appreciate the partnership with the Laguna Foundation in launching the development of the Laguna TMDLs. This report serves as the foundation from which we will develop a strategy to attain healthy water quality conditions in the Laguna watershed". Regional Water Board staff expect the public input process for development of the Laguna TMDLs to begin within the next year.

Contributors to the report included expert consultants from TetraTech, Inc. and Philip Williams and Associates and a technical advisory group with experts from the City of Santa Rosa, the Regional Water Board, NASA Ames Research Center, UC Cooperative Extension, United States Geologic Survey, California Department of Fish and Game, Sonoma County Water Agency, Sonoma Ecology Center, the Occidental Arts and Ecology Center, and Sonoma State University. The document was peer reviewed by experts at the San Francisco Estuary Institute, with funding provided by the City of Santa Rosa.

Copies of the report are available for download at:
www.lagunadesantarosa.org/programs_sr_wr_wqm.shtml

