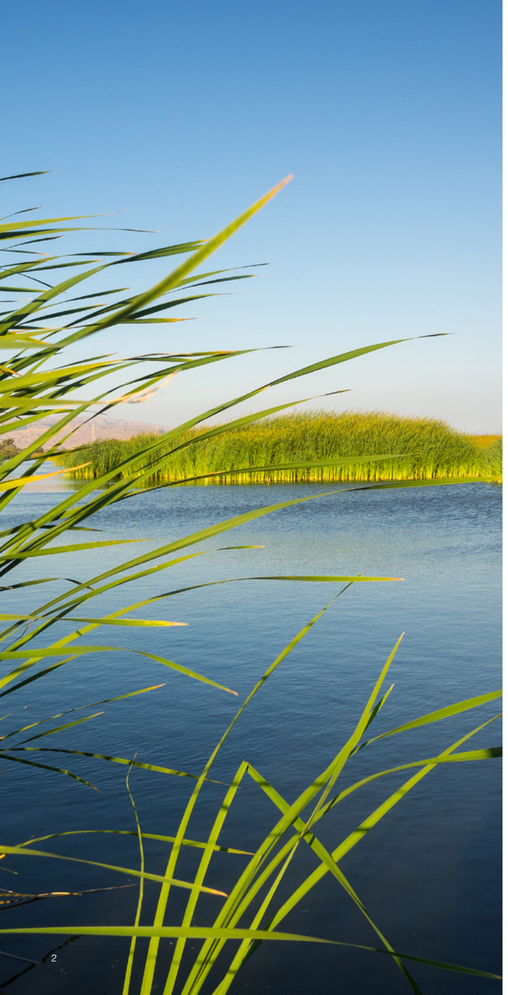
SFEI | San Francisco Estuary Institute

2025-26 Annual Report



Dear Friend,

As the region's trusted environmental science provider, **SFEI delivers the rigorous, actionable science needed to revitalize our Bay Area ecosystem and beyond.** It is essential work foundational to the long-term environmental health of our region.

Just like the Bay Area, we are constantly evolving to meet the moment, asking ourselves: How can we stay ahead of growing environmental challenges?

Over the last year, you've helped us deliver the credible and reliable science we are known for—just faster, smarter, and better. This Annual Report captures a few snapshots of that innovation in action, including cutting-edge water quality monitoring, machine learning-assisted mapping, sand deficit analysis, novel science communication techniques, and strategies for managing nutrients in the Bay.

Your generous support gives our team the flexibility to innovate—developing faster, more accurate methods and ensuring our data is highly accessible to the communities and decision-makers who need it most.

Together, we can build a future where our environment is clean, healthy, resilient, and thriving. **Thank you for partnering with us to realize a brighter tomorrow for our region.** We are incredibly grateful for your support.

With gratitude,

Emily Corwin
Executive Director

Ann Hayden
SFEI Board Chair

Front cover: **Managing Senior Scientist Ariella Chelsky collects zooplankton samples using a using a plankton net.** Photo by Anna Rasmussen. Left: Photo by Shira Bezalel.

6,600+
people engaged with presentations and outreach events

113
practitioners trained to assess wetlands across CA

21
federal and state regulations informed by SFEI's emerging contaminant work since 2006

The San Francisco Estuary Institute's mission is to deliver visionary science so people can revitalize nature in our communities.

77,000
new wetland features added to EcoAtlas

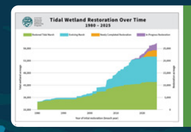
19,000
acres of wetlands digitally mapped

We advance science to rebuild and sustain the chemical, physical, and biological health and resiliency of the San Francisco Estuary and beyond.

201
partnerships with government agencies, academic institutions, community-based organizations, and more

SFEI Programs: Impact Across the Estuary

SFEI's independent science and monitoring has big impacts on the health of the Estuary and beyond. Here is how our ongoing work—built year over year—continues to transform and protect our water, land, and communities.



EcoAtlas tracks progress towards regional wetland restoration goals.

SFEI develops a strategy to reconnect Novato baylands to the tides to build resilience to sea level rise.

Bay Conservation and Development Commission receives an SFEI report about the sand deficit in the Bay to inform future management.

Sacramento

Novato

Richmond

SFEI

Oakland

San Francisco

San Mateo

Palo Alto

Mountain View

Leftmost: Photo by Shira Bezalel. Bottom right photo by Lauren Stonebumer.

The Ocean Protection Council receives the SFEI-authored California Statewide Plastics Monitoring Strategy, the first of its kind in the nation.

Maps of historical ecology inform the future of Sacramento Valley restoration.

SFEI scientists collect high frequency water quality data in the Bay.

The City of Mountain View adopts Biodiversity and Urban Forest Plan developed by SFEI.

Our Programs

CLEAN WATER

Ensuring strong stewardship through water quality science

ENVIRONMENTAL INFORMATICS

Developing technologies to bring SFEI's science to life

RESILIENT LANDSCAPES

Fostering healthy, resilient landscapes so people and ecosystems thrive

SCIENCE COMMUNICATIONS

Bridging the gap between complex scientific research and usable guidance

Preventing the Next Silent Spring

Over 350,000 chemicals are registered for use globally. A portion of these chemicals become contaminants of emerging concern—unregulated or under-regulated compounds that can enter the environment and may harm ecological or human health.

For over 30 years, the Regional Monitoring Program (RMP) has been an early-warning system for San Francisco Bay, tracking poorly understood water quality threats so decision-makers and resource managers can prevent the next Silent Spring.

Over the last two decades, RMP data has repeatedly informed historic state and federal regulatory decisions by investigating emerging threats like toxic flame retardants (polybrominated diphenyl ethers, or PBDEs), microplastics, and salmon-killing, tire-derived chemicals. The RMP has also developed one of the most comprehensive datasets in the world for emerging contaminants in urban storm-water runoff.

Today, decades of rigorous monitoring have helped make the Bay cleaner, safer, and more resilient than ever. Yet with new chemicals registered for use worldwide, the RMP remains ready to track whatever comes next.

Left: **Stormwater sampling at a rain garden in San Francisco.** Photo by Charlotte Diamant. Upper right photo by Shira Bezalel.

"Almost no other communities of scientists studying regional problems have been as successful as SFEI in the Emerging Contaminants Workgroup. And in part, that's because SFEI can take the latest science and enable its translation into tangible policy."

David Sedlak, Professor of Environmental Engineering, UC Berkeley

Timeline of the Emerging Contaminants Workgroup

2006 Workgroup begins with under $80,000 annual budget for studies.

2013 **Flame Retardants:** Within a decade of phasing out toxic PBDE flame retardants, the RMP tracked the Bay's recovery from some of the highest levels worldwide.

2015 **Microplastics:** RMP sampling finds microplastic beads in the Bay. The results convinced California's Governor to sign a bill banning microbeads in personal care products, which influenced a federal ban. The RMP has since convened a dedicated microplastics workgroup.

2020 **6PPD-quinone:** Coho salmon killed during storm events in restored urban streams in the Pacific Northwest led to the discovery of 6PPD-quinone, a tire-derived chemical that is extremely toxic. **Thanks to SFEI data, California became the first government in the world to regulate 6PPD in tires.**

2026-Beyond **Decades of rigorous RMP science have helped the Bay become more swimmable, fishable, and liveable than ever.**

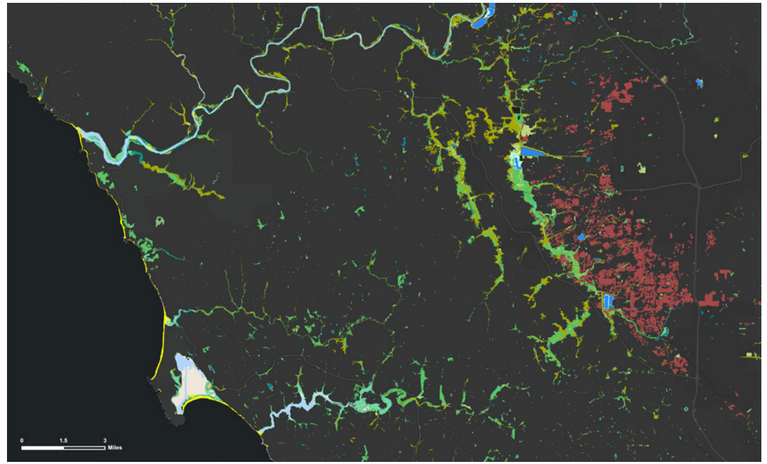
Mapping at the Speed of Change

If you don't know a habitat exists, you can't protect it. For decades, SFEI's Environmental Informatics team has been a pioneer in mapping California's habitats. We use cutting-edge tools to track landscape change over time with greater speed and accuracy, equipping planners with the recent insights they need to make the best decisions.

Historically, mapping ecosystems required tracing wetland features by hand—a slow, costly, and inconsistent process that took months to years. Now, much of the U.S. wetlands map data is over 40 years old. Without accurate basemaps, we cannot monitor progress toward long-term environmental goals.

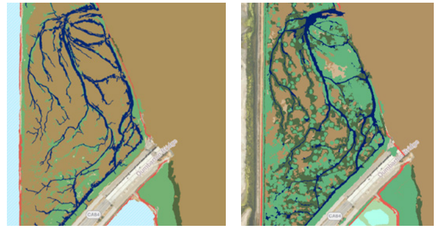
To accelerate this process, SFEI deployed advanced automated methods, mapping 19,000 acres of watershed features in the Russian River Watershed in just three weeks. We then leveraged machine learning models to expedite the quality control process. Rather than hunting for errors manually, models analyzed the dataset and prioritized features most likely to contain anomalies, allowing our GIS specialists to target and resolve discrepancies.

These innovative methods dramatically accelerate the translation of California's landscapes into actionable, open-source data, providing communities with the timely, trustworthy information needed to protect and manage vital resources.



Above: **A snapshot of wetlands mapped in the Russian River Aquatic Resource Inventory. This image shows wetlands of the Russian River, Laguna de Santa Rosa, Bodega Bay, and Estero Americano.**

Right: **SFEI's advancements in automated wetland mapping enables us to capture the change that is occurring in the wetlands that protect our communities and provide valuable habitat. This comparison shows Moseley Tract represented in the Baylands Habitat Map 2020 and draft Baylands Habitat Map 2025 datasets. (Note that the draft BHM2025 dataset is subject to change and refinement based on local expert input and model improvements.)**



SFEI's David Peterson, Lisa Beers, and Sarah Pearce en route on the Napa River to survey marsh health using the California Rapid Assessment Method (CRAM). Photo by Sarah Pearce.

SFEI's Jennifer Dougherty and Ezra Miller collect stormwater samples to test for microplastics. Photo by Sierra Garcia.

Sturgeon sampling in San Pablo Bay. Photo by Sierra Garcia.

Boots on the Ground (and In the Water)

From the Bay's creeks to research vessels, SFEI's team spend nearly as much time in the mud and water as they do at their desks. This is the fieldwork behind the data: the sampling, tagging, and hands-on monitoring that keeps the Estuary's story current.

Watershed Stewards Program Corpsmembers collect water samples at a Clean Water monitoring station.

Field technicians at a CRAM training on Uvas Creek near Gilroy. Photo by Sarah Pearce.

Groundwork for Resilient Shorelines

Sediment is the foundation of the beaches and tidal marshes that protect our shoreline communities. Although resource managers have long suspected a diminishing sand supply, SFEI's latest research confirms a critical shift: sand is being removed from the Bay faster than it's replenished.

This year, SFEI scientists published a ground-breaking study that finally quantifies the Bay's modern sand budget.* The findings reveal a potential threat to our shorelines: a sand deficit of over 1 million metric tons per year. The data prove the Bay now relies on local watersheds for its sand, even as commercial mining and dredging remove roughly 1.2 million metric tons every year.

This breakthrough is emblematic of SFEI's sediment science, adding a vital new chapter to the body of work crucial to future shoreline and wetland projects. By replacing assumptions with definitive numbers, SFEI has delivered the foundational data the region needs for the next step: understanding the long-term impacts of the sand deficit on our shorelines.

* The study was commissioned by the Bay Conservation and Development Commission and the California State Coastal Conservancy.

Right: **Environmental Scientist Kyle Stark checks a mudflat marker in San Leandro Bay.** Photo by Don Yee.

Below: **Environmental Scientist David Peterson demonstrates how to measure erosion features on San Tomas Aquino Creek in San Jose.** Photo by Kyle Stark.

Bottom left: Photo by Jennifer Dougherty. All other photos by Emily Corwin.

Experimenting with Science Engagement

What happens when SFEI's exceptional science meets laughs and doodles on a chalkboard? A tabletop game about sea-level rise adaptation!

At SFEI, we are constantly looking for new ways to improve how we connect people—like you!—with our work. **We design our reports to make them accessible and actionable—and know that inspiring people to revitalize nature requires us to experiment with new ways to communicate and connect people to science.**

Here are some of the ways we connected people and science this year.

Sediment for Survival
We developed a tabletop game that demystifies climate adaptation strategies by placing game players as decision-makers.

Deepening Community Engagement
We brought our science directly to Bay Area communities at an Oakland Roots game, a West End Arts District exhibition, the Exploratorium, and local Bay Area community events and classrooms.

Field Notes from the Bay
SFEI scientists, analysts, and specialists took to the stage to share the exciting, intriguing, and messy stories behind the science.

FEATURED PROJECT

Nutrient Management Strategy: Preventing Harmful Algal Blooms

While invisible to the human eye, nutrients shape the health of San Francisco Bay. Most nutrients like nitrogen and phosphorus enter the Bay from regional wastewater treatment plants, the last stop for sewage lines taking waste down the drain from our homes and businesses.

For over a decade, the Nutrient Management Strategy (NMS) has broadened our understanding of how these nutrient inputs influence algae growth and life in the Bay. After the devastating 2022 harmful algal bloom that led to widespread fish kills, we focused our research to identify what allowed the bloom to occur and how nutrient management could prevent it from happening again.

Informed by SFEI's post-2022 bloom data and analysis, the SF Bay Regional Water Quality Control Board mandated a historic 40% reduction in nutrient loads for all wastewater treatment plants. This year, NMS scientists shared new analyses demonstrating the direct role that continued wastewater inputs played in fueling the bloom. The findings also suggest that marine viruses played a potential role in stopping the bloom.

To support regional management and broader research, we also shared two open-access resources: the SFEI San Francisco Bay Hydrodynamic Model, which can be used to understand how dissolved substances like nutrients move through the Bay, and the NMS water quality sensor datasets, which have over a decade of high-frequency data.

By continuing to refine our understanding of harmful algal blooms and the Bay in general, NMS science is guiding billions of dollars in infrastructure upgrades in the region, ensuring the Bay stays safe for humans and wildlife.

Far left: **Algae and other biofouling build up quickly on Bay water quality sensors, requiring monthly cleaning and maintenance by the NMS team.**

Bottom left: **The NMS team periodically collects water samples at sensor stations to verify that the continuous data readings are accurate.**

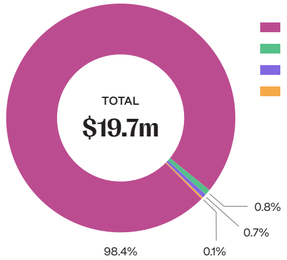
Right: **Environmental Analyst Lucy Montgomery grabbing the tools needed to keep NMS sensors running smoothly.**

Photos by Sierra Garcia.

2024–25 Financials

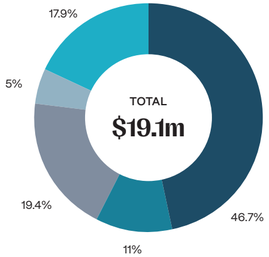
As the Estuary changes, SFEI is growing to meet new challenges head-on—expanding from 70 to 95 dedicated team members over the last five years. While government sources continue to provide the bulk of our funding, your support is the catalyst: **for every dollar you give, we unlock $145 in public funding to deliver actionable, high-impact science for our community.**

Revenue



Government contracts	$19.4m
Investment return	$158k
Private philanthropy	$134k
Other	$15k

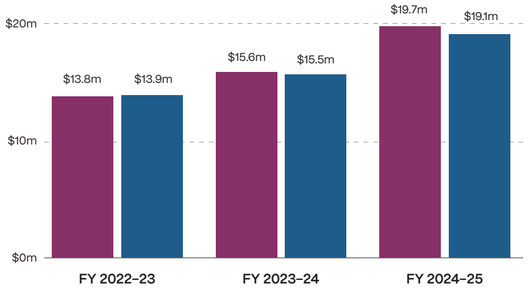
Expenses



Clean Water Program*	$8.9m
Environmental Informatics Program	$2.1m
Resilient Landscapes Program	$3.7m
Aquatic Science Center	$947k
Administration	$3.4m

* includes Regional Monitoring Program

Budget Growth



Leadership

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We thank **Adam Laputz** for his years of service on the Board of Directors. He stepped down in 2026.

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Nick Wolf

**Legacy gift*

Above: **SFEI staff in 2026.** Photo by Emily Corwin. Opposite: Photo by Shira Bezalel. Back cover: **SFEI's Lorenzo Flores and Pete Kauhanen pilot a drone to capture high-resolution imagery and elevation data over San Francisco Bay's wetlands and other critical habitats.** Photo by Shira Bezalel.

SFEI | San Francisco Estuary Institute

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SFEI science stays strong.
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