



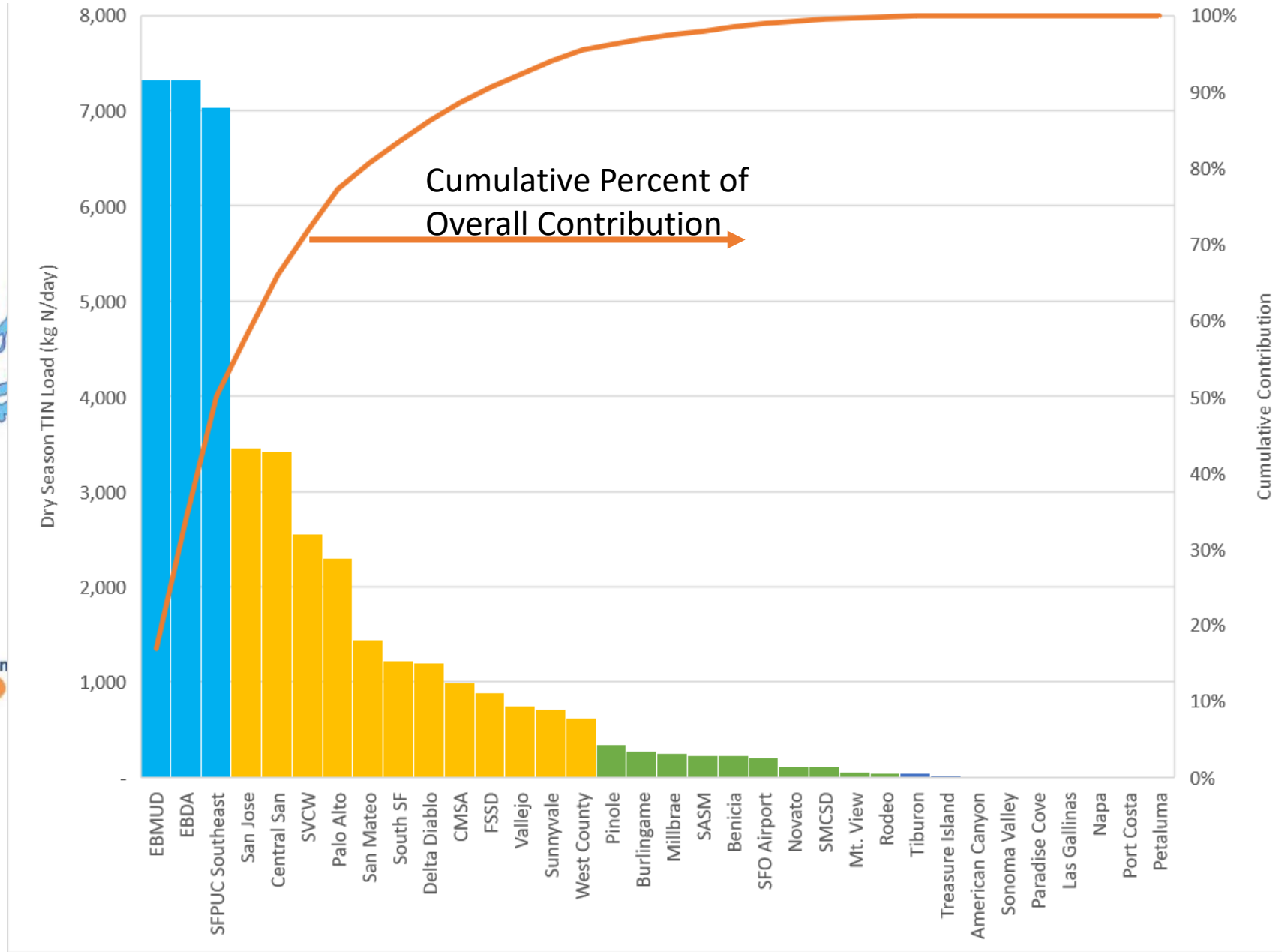
BACWA
BAY AREA
CLEAN WATER
AGENCIES

San Francisco Bay Nutrient Watershed Permit

Prof David Jenkins
Nutrient Removal Workshop

Lorien Fono
BACWA Executive Director

40 POTWs discharge 86% of dry season nitrogen to SF Bay

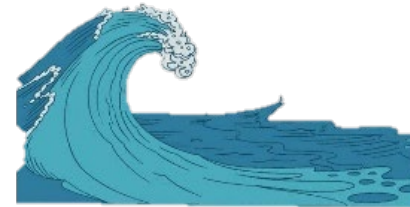


The SF Bay has historically been resilient to nutrients

1. High turbidity blocks the light phytoplankton needs to grow



2. Strong tidal mixing reduces nutrient concentrations

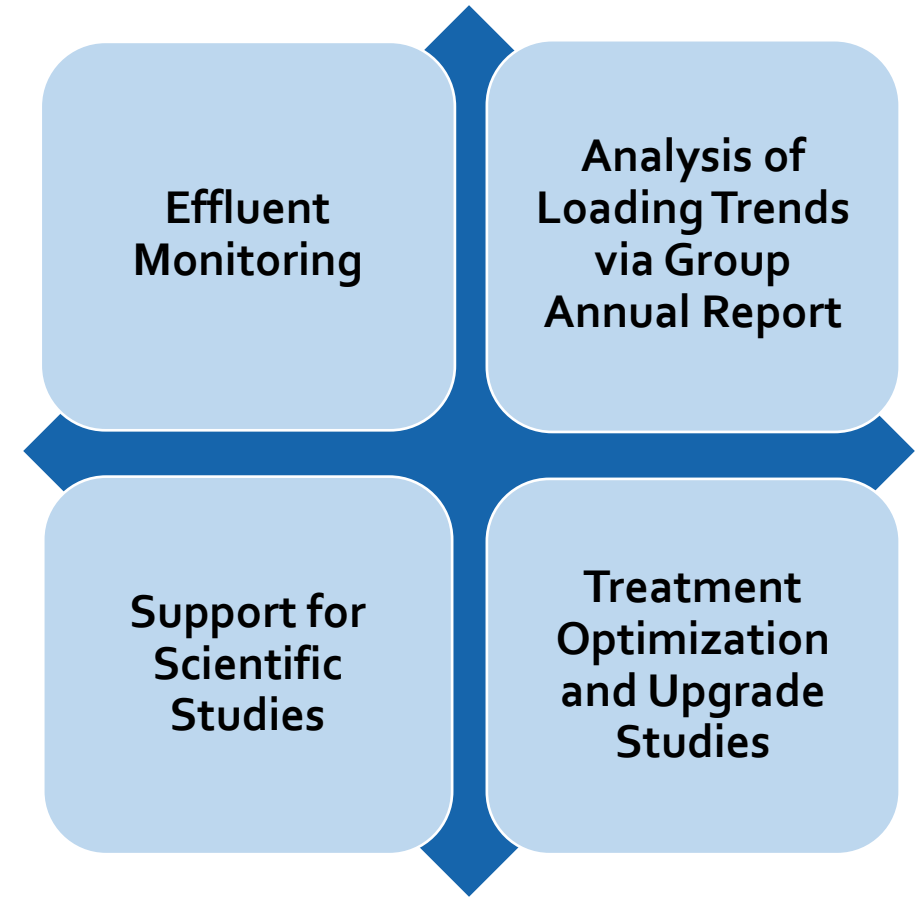


3. Filter-feeding clams reduces phytoplankton concentrations



Watershed Permit 1: 2014 – 2019

Regional management of nutrients



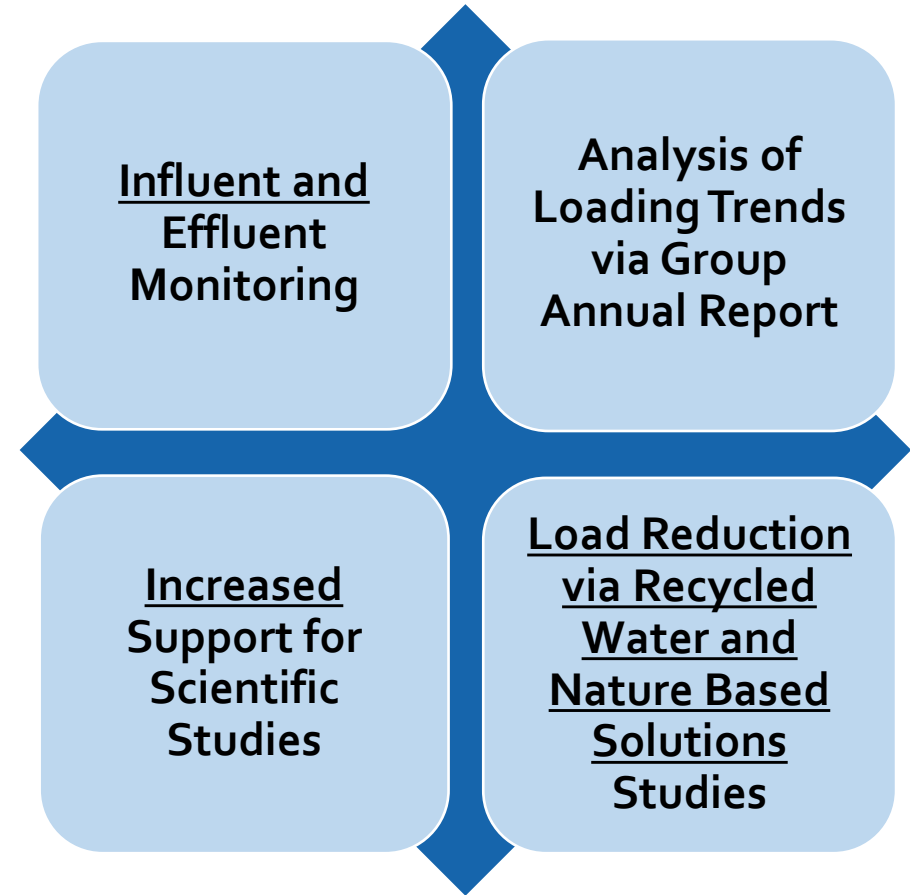
Key Outcomes of 1st Watershed Permit



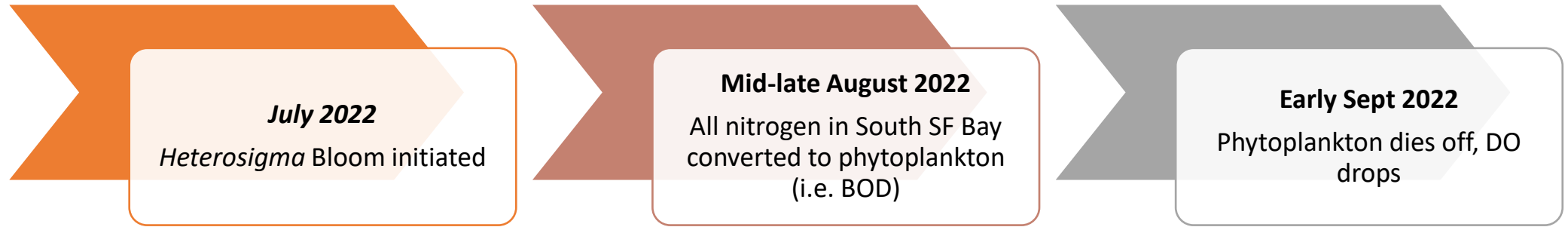
Strategy	Total N Load Reduction to the Bay	Total Present Value for Total N Load Reduction to the Bay (\$ Mil in 2023)
Optimization	7%	\$200 M
Sidestream Treatment	19%	\$870 M
Upgrade Level 2 (15 mg N/L)	57%	\$10.8 B
Upgrade Level 3 (6 mg N/L)	82%	\$13.0 B

Watershed Permit 2: 2019 – 2024

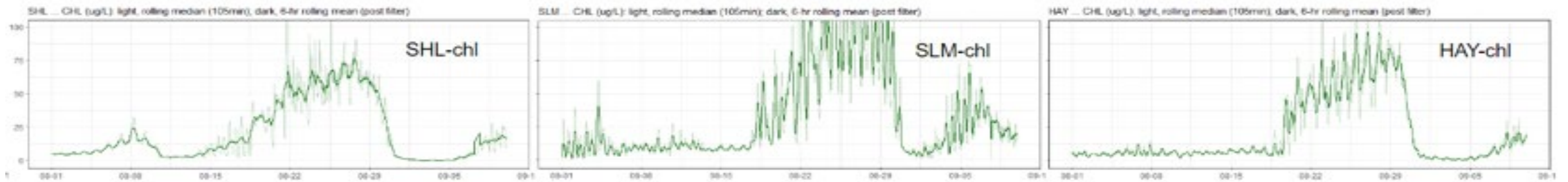
Regional management of nutrients



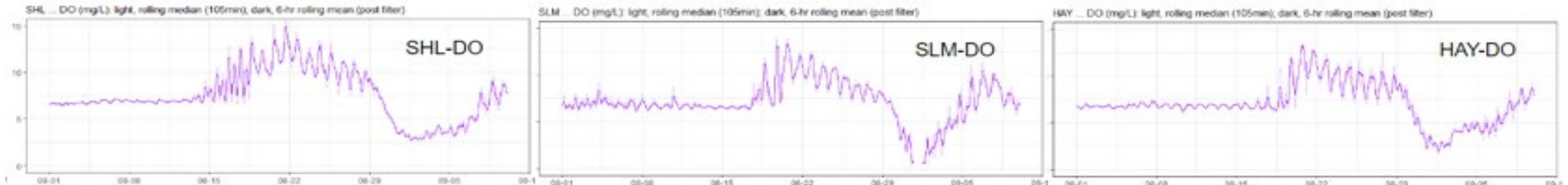
In August 2022 a *Heterosigma akashiwo* bloom led to a major fish kill in SF Bay



Chlorophyll



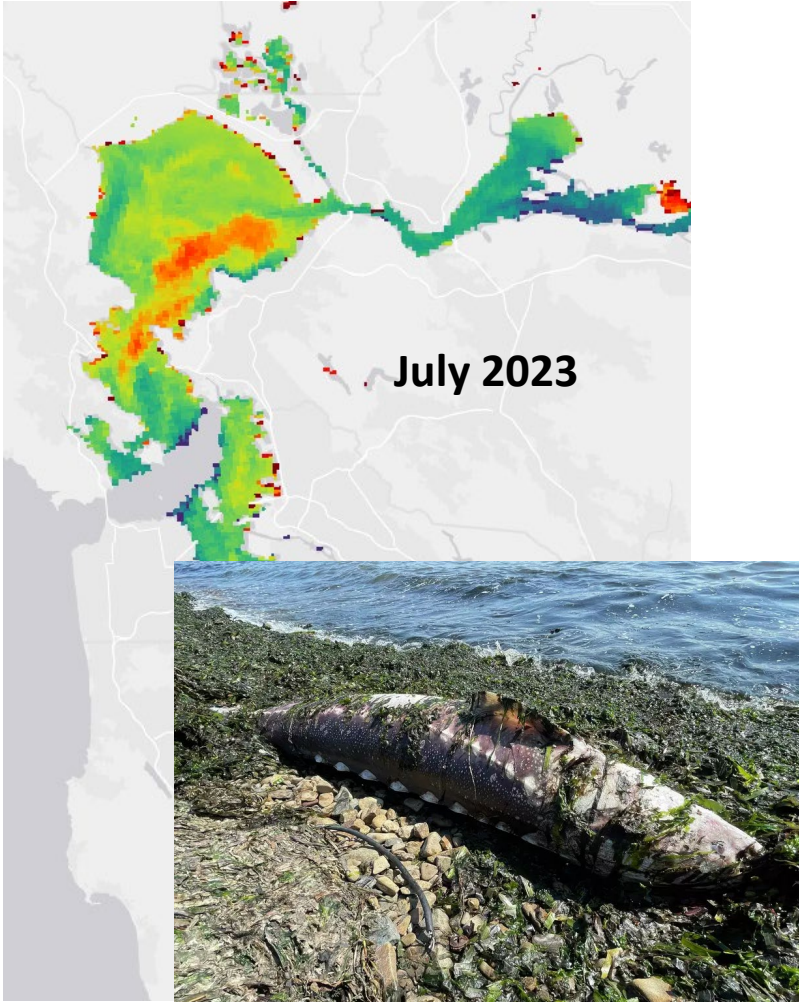
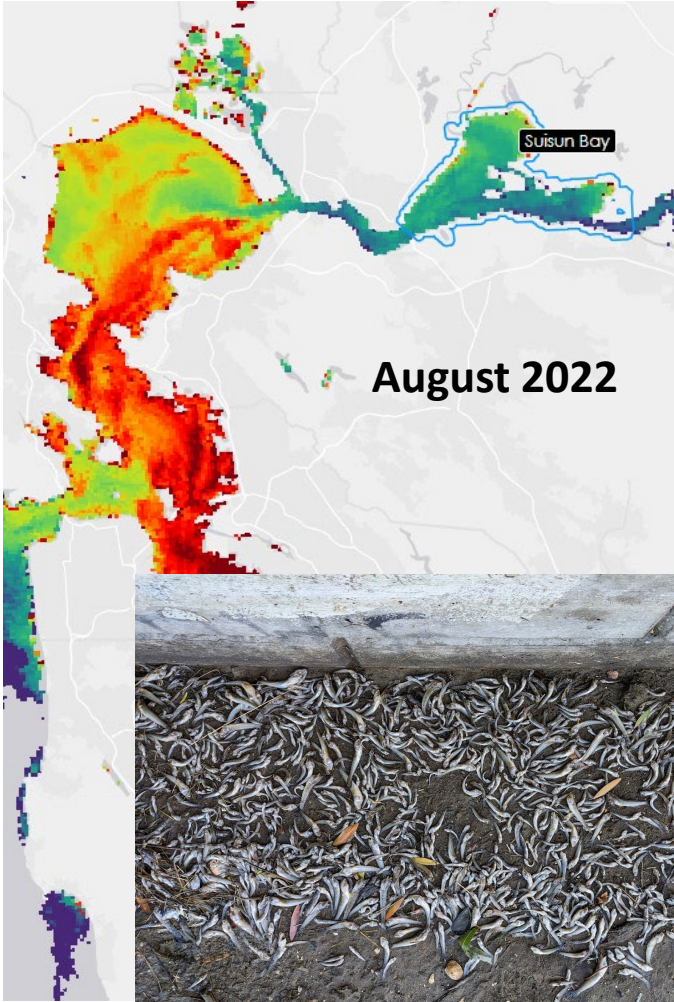
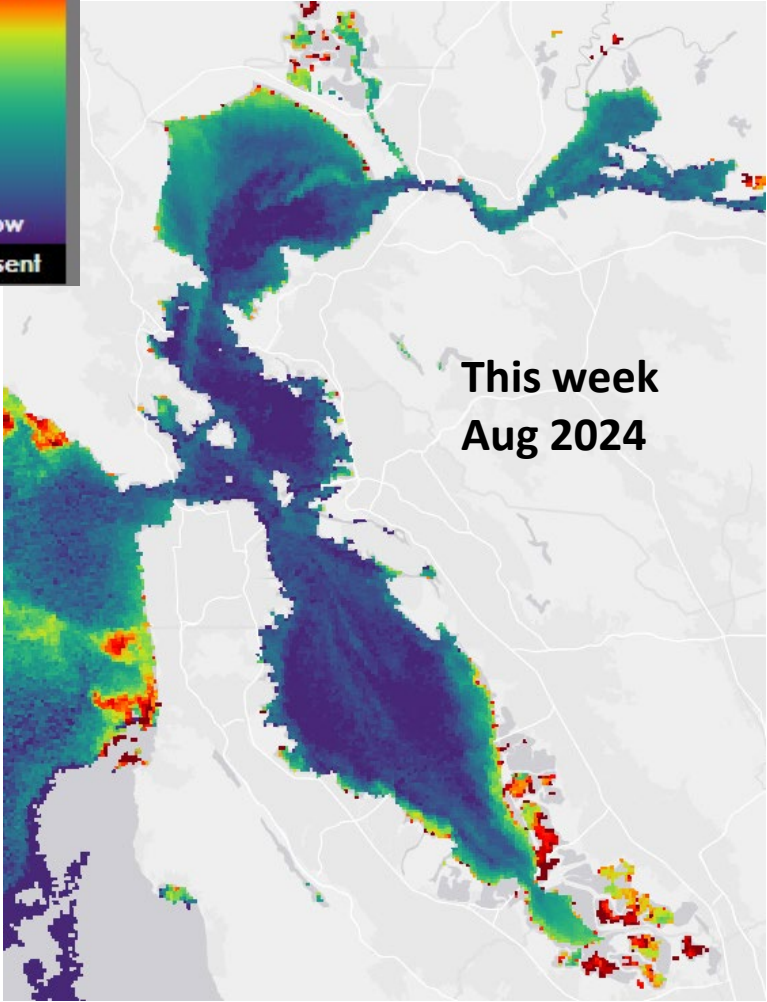
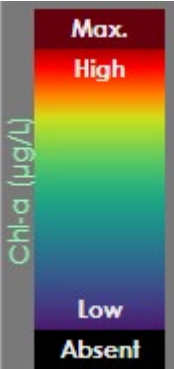
Dissolved O2



3 stations in the South SF Bay

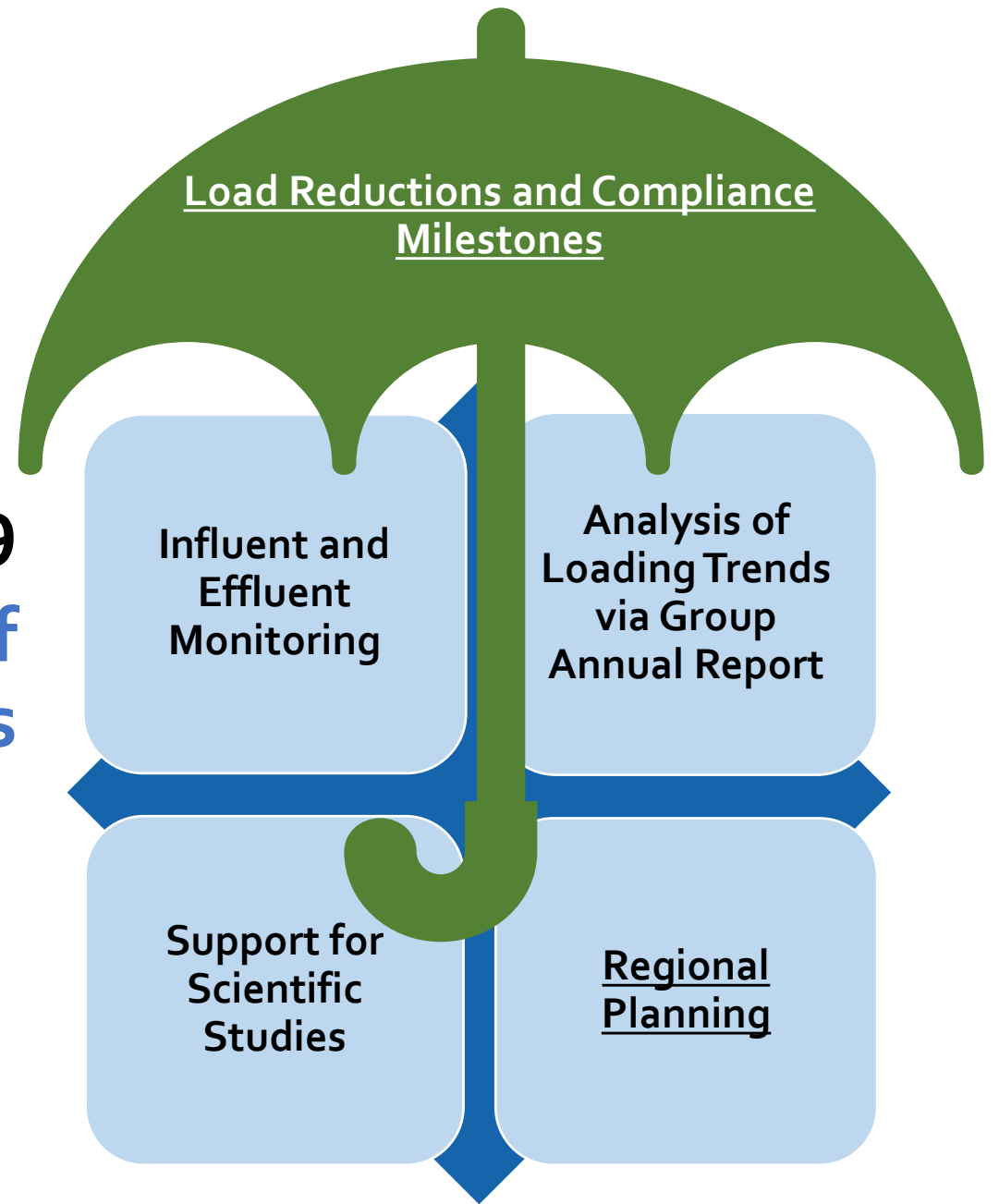
Satellite data can tell us about real-time algae levels

fhab.sfei.org



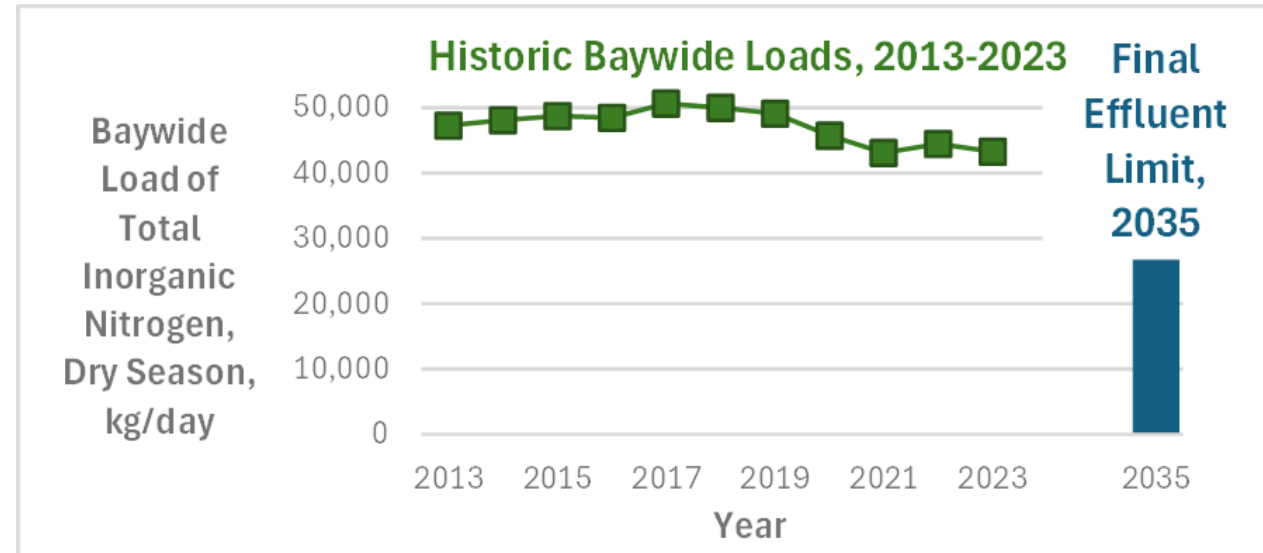
Watershed Permit 3: 2024 – 2029

Regional management of nutrients



Third Watershed Permit adopted July 10, 2024

- Requires **40% aggregate dry season** load reduction
- Apportioned based on current performance – load limits calculated by multiplying effluent flow by **20.5 mg/L TIN**
- **10 year** compliance schedule
- Recognition that early actors, projects with multiple benefits and others will need more time (but doesn't provide more time within the permit)
- Requires regional planning
- Allows establishment of a trading program



San Francisco Chronicle

Poop and pee cause algae blooms in S.F. Bay. Water agencies will spend \$11 billion to fix the problem



10 years isn't enough time for a thoughtful regional approach to nutrient reduction with multiple benefits



So how do we avoid a regulatory train wreck in 10 years?

RESOLUTION R2-2024-0014

Resolution to Identify and Consider Regulatory Mechanisms to Extend Compliance Schedules for Nutrient Effluent Limitations

Whereas:

1. San Francisco Bay has long been recognized as a nutrient-enriched estuary with higher nutrient (i.e., nitrogen and phosphorus) concentrations than most estuaries in the world. Too much nitrogen and phosphorus can result in excessive phytoplankton growth, which can be associated with harmful algal blooms and low dissolved oxygen concentrations. In San Francisco Bay, nitrogen has more influence on phytoplankton growth than phosphorus. During the dry season, municipal wastewater dischargers account for approximately 86 percent of the total nitrogen load to San Francisco Bay.
2. The Board initiated a Nutrient Management Strategy in 2012 and convened a Steering Committee in 2014, with the participation of U.S. EPA, dischargers, scientists, and non-governmental organizations. The Steering Committee oversees a Nutrient Science Program that includes monitoring, modeling, and special studies to better understand and respond to adverse effects of nutrients on San Francisco Bay.
3. In 2014, the Board issued the first Nutrients Watershed Permit (NPDES Permit CA0038873, Order R2-2014-0014) to provide a consistent approach to regulating municipal wastewater treatment with respect to nutrients. The permit required dischargers to (1) cumulatively contribute \$880,000 per year to the Nutrient Science Program; (2) monitor effluent to characterize nutrient discharge concentrations and loads; and (3) evaluate opportunities to reduce nutrient discharges through treatment plant optimization and upgrades.
4. In 2019, the Board reissued the second Nutrients Watershed Permit (Order R2-2019-0017). The reissued permit required dischargers to (1) cumulatively

Key Task and Due Dates in the Next Year

Individual Dischargers

Task	Due Date
Review Monitoring Requirements <ul style="list-style-type: none"> • Frequency for Total Phosphorus • Influent Nitrate-Nitrite Applicability 	October 1, 2024
Provide nutrient flow and load information to BACWA for 2025 Group Annual Report	Late 2024
Identify preliminary alternatives for meeting final effluent limits, or identify compliance pathway (unless “Early Actor”), for 2025 Group Annual Report	TBD before April 1, 2025

BACWA

Task	Date
Hire Consultant to assist with Regional Planning	RFP out by September 2024
Hire Consultant to assist with Group Annual Reports	RFP released by September 2024
Decide on Future Allocation of Nutrient Surcharges \$2.2M/Year	Update allocation prior to FY26 invoices
Group Annual Report and Alternatives Analyses	Due April 1, 2025
Scoping Plan	Due July 1, 2025

Where to next?



- Work with Water Boards to amend State Compliance Schedule Policy
- If not feasible, work on TMDL with realistic timeframe
- BACWA will continue to coordinate reporting
- For those who have not yet started, kick off planning!
- Explore feasibility of a regional trading program