PFAS in Bay Fish: Driver of Concern

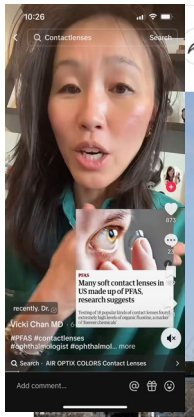
Miguel Mendez, Rebecca Sutton, and Jay Davis
San Francisco Estuary Institute

RMP Annual Meeting, October 2023

PFAS: ‘Forever Chemicals’

3M Reaches $10.3 Billion Settlement in ‘Forever Chemicals’ Suits

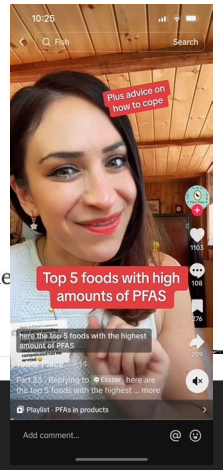
The deal followed an agreement by Chemours, DuPont and Corteva to pay $1.19 billion to help resolve claims that the chemical manufacturers contaminated drinking water across the country.



The headquarters of 3M in Maplewood, Minn., in 2020. The comp suits accusing chemical manufacturers of contaminating drinking Pfosi/Reuters

By Lisa Friedman and Vivian Giang

June 22, 2023



Biden Administration to Restrict Cancer-Causing ‘Forever Chemicals’

The government will strictly limit in drinking water two chemicals that are ubiquitous in modern society but are linked to a range of health effects.

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YOUR HEALTH

Lots of Tap Water Contains ‘Forever Chemicals.’ Take These Steps to Reduce Your Risk.

You can’t avoid toxic PFAS chemicals completely but you can lessen your exposure at home

WISCONSIN

Island residents seek $40M from Wisconsin city over PFAS contamination

In a Wisconsin town over 500 wells were found to be contaminated with PFAS as of June 2021

Associated Press

Published July 14, 2023 2:16pm EDT

The New York Times Magazine

‘Forever Chemicals’ Are Everywhere. What Are They Doing to Us?

PFAS lurk in so much of what we eat, drink and use. Scientists are only beginning to understand how they’re impacting our health — and what to do about them.

Photo: iStock/sonsam

Forever Chemicals Are in Nearly Half of America’s Tap Water. Here’s How to Reduce Your Exposure.

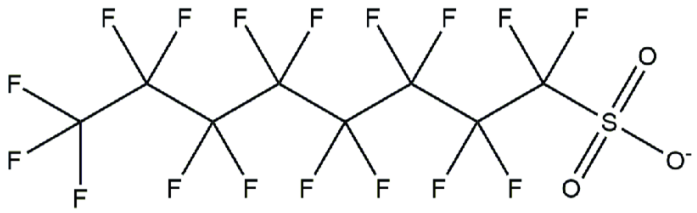
PUBLISHED JULY 24, 2023

Tim Heffernan

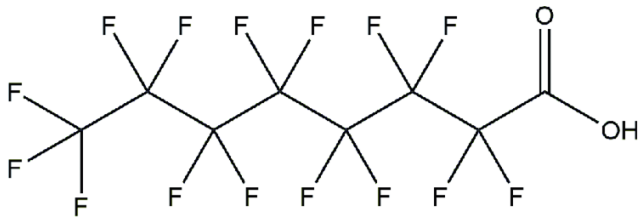
Clean, safe drinking water is a luxury that many people in the United States take for granted. But your tap water may not be as safe as you think.

Per- and Polyfluoroalkyl Substances (PFAS)

- >15,000 known compounds
  - **PFOS** and PFOA most well-known and studied
- Used in countless consumer, commercial, and industrial products
- Highly persistent
- Bioaccumulative
- Toxic to aquatic life and humans



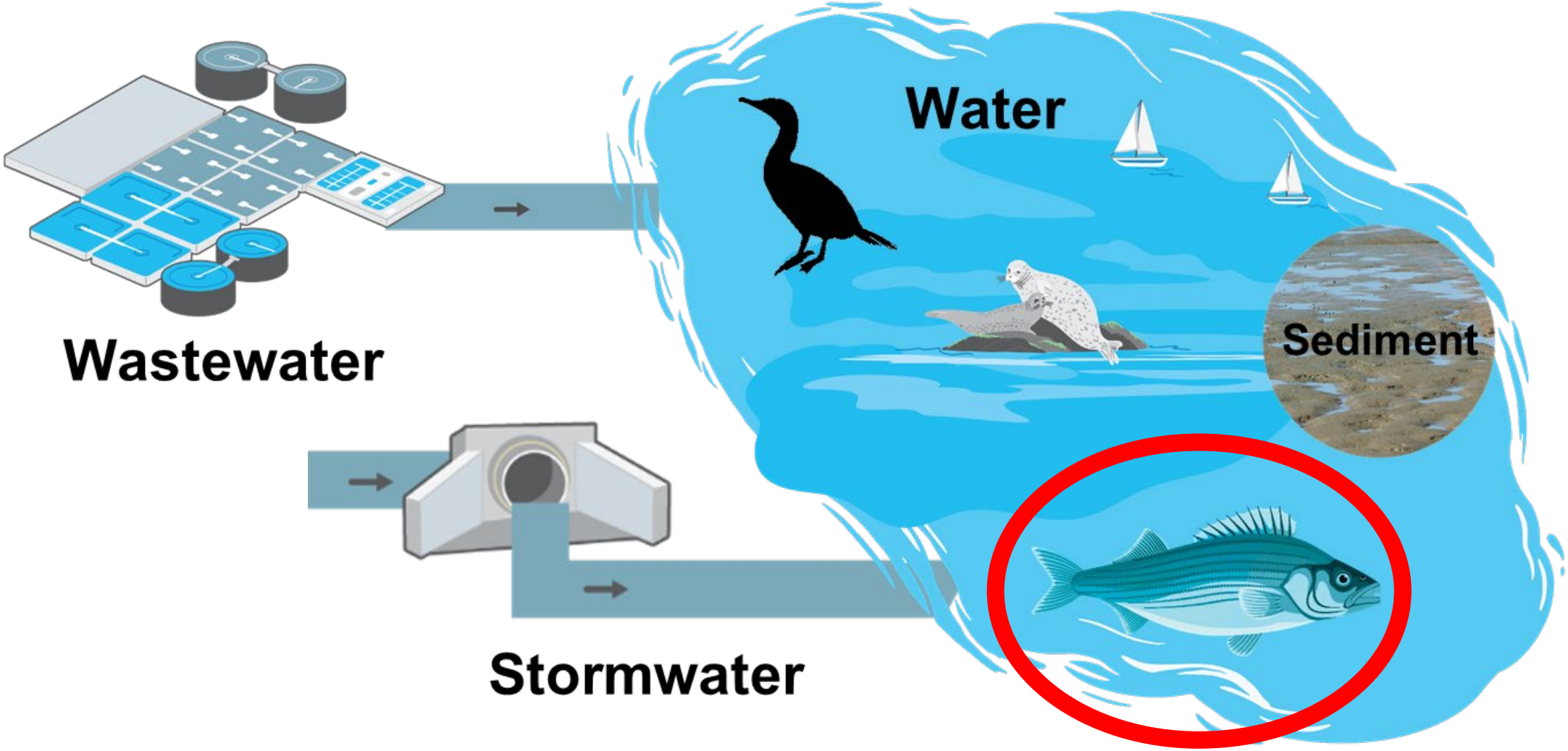
Perfluorooctane sulfonate (PFOS)



Perfluorooctanoic acid (PFOA)

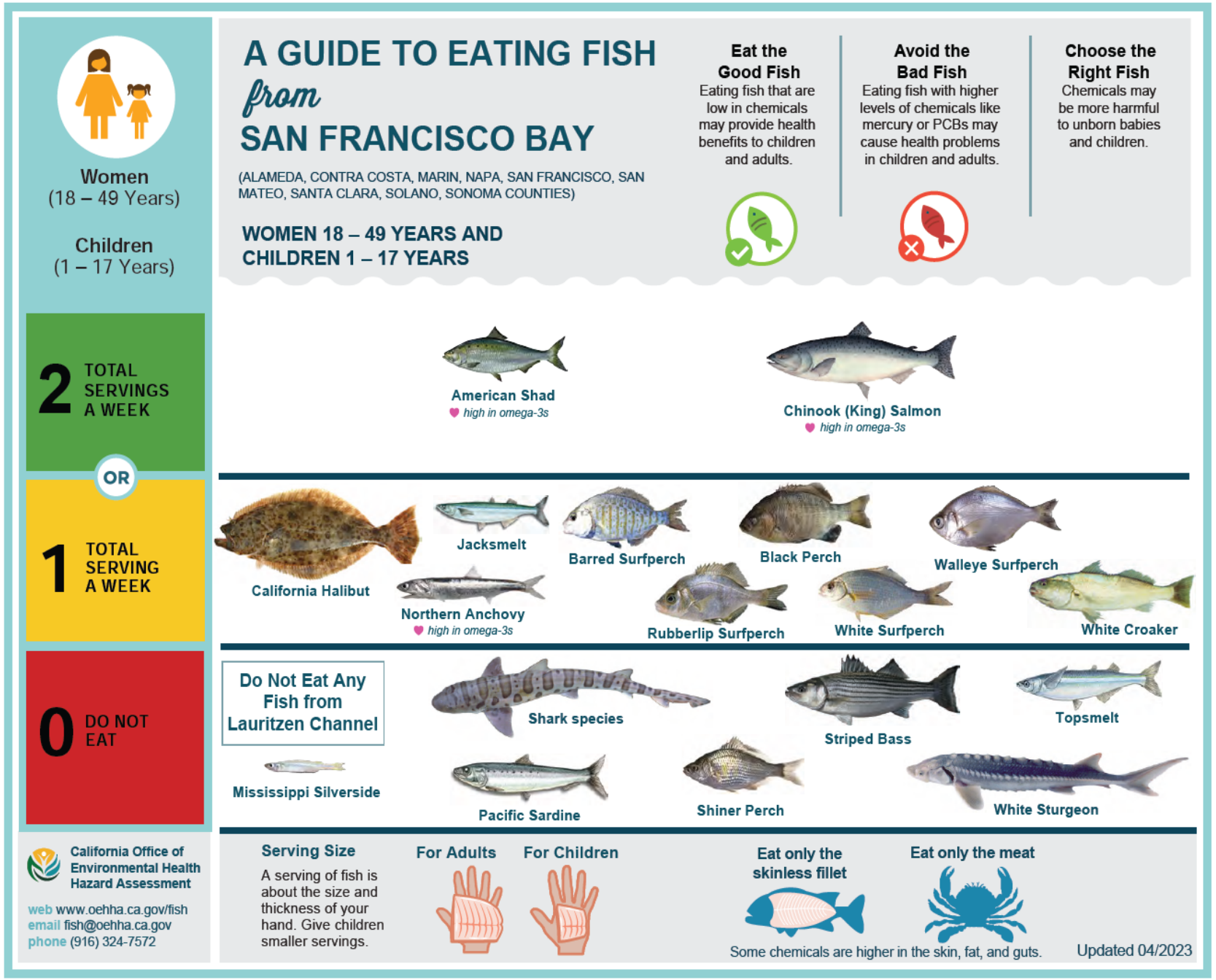
Image Credit: Regenesis

Monitoring PFAS in San Francisco Bay



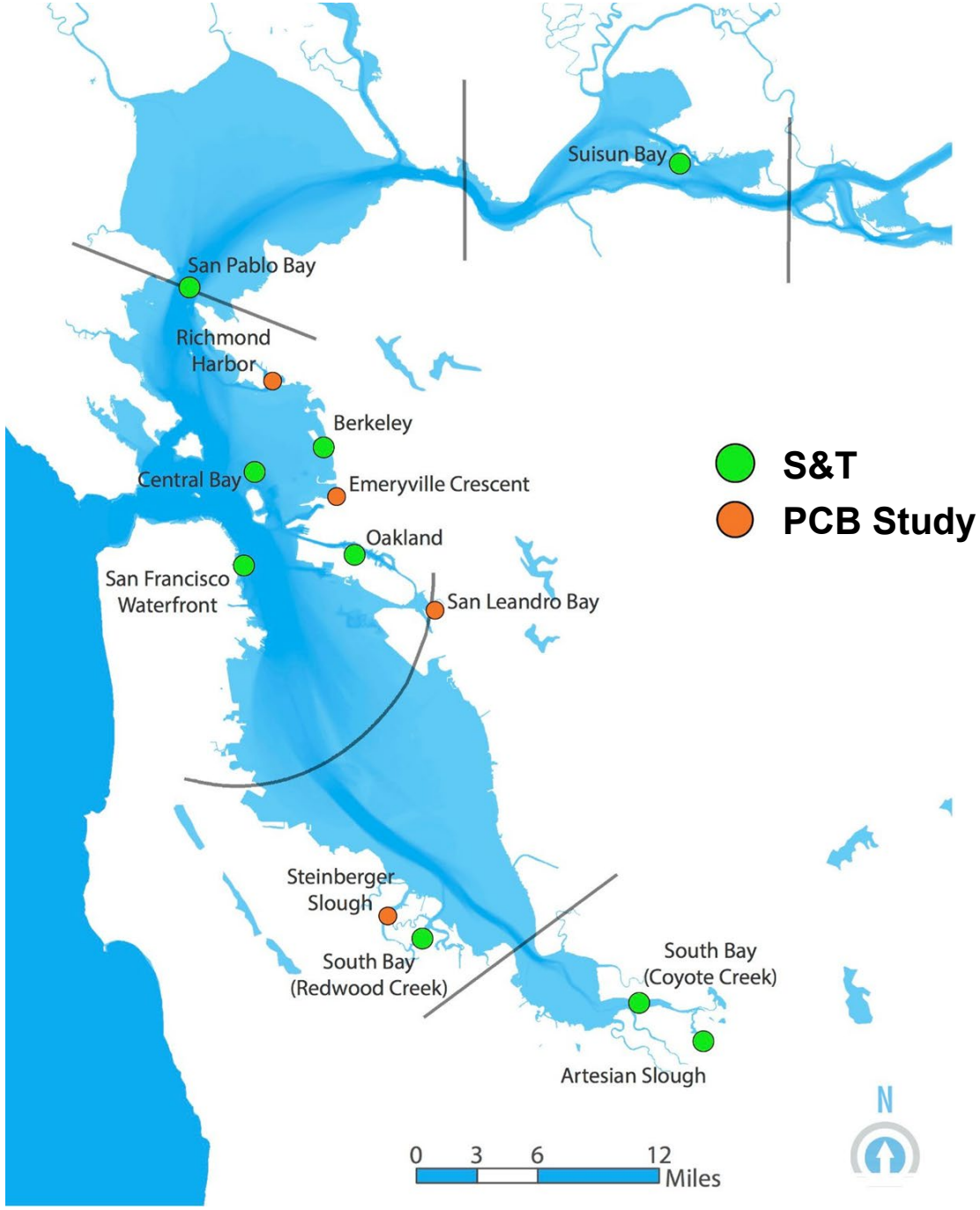
Bay Fish Consumption Advisory

- RMP data into information
- Pretty restrictive for the sensitive population
- Driven by mercury and PCBs – PFAS not included in the assessment



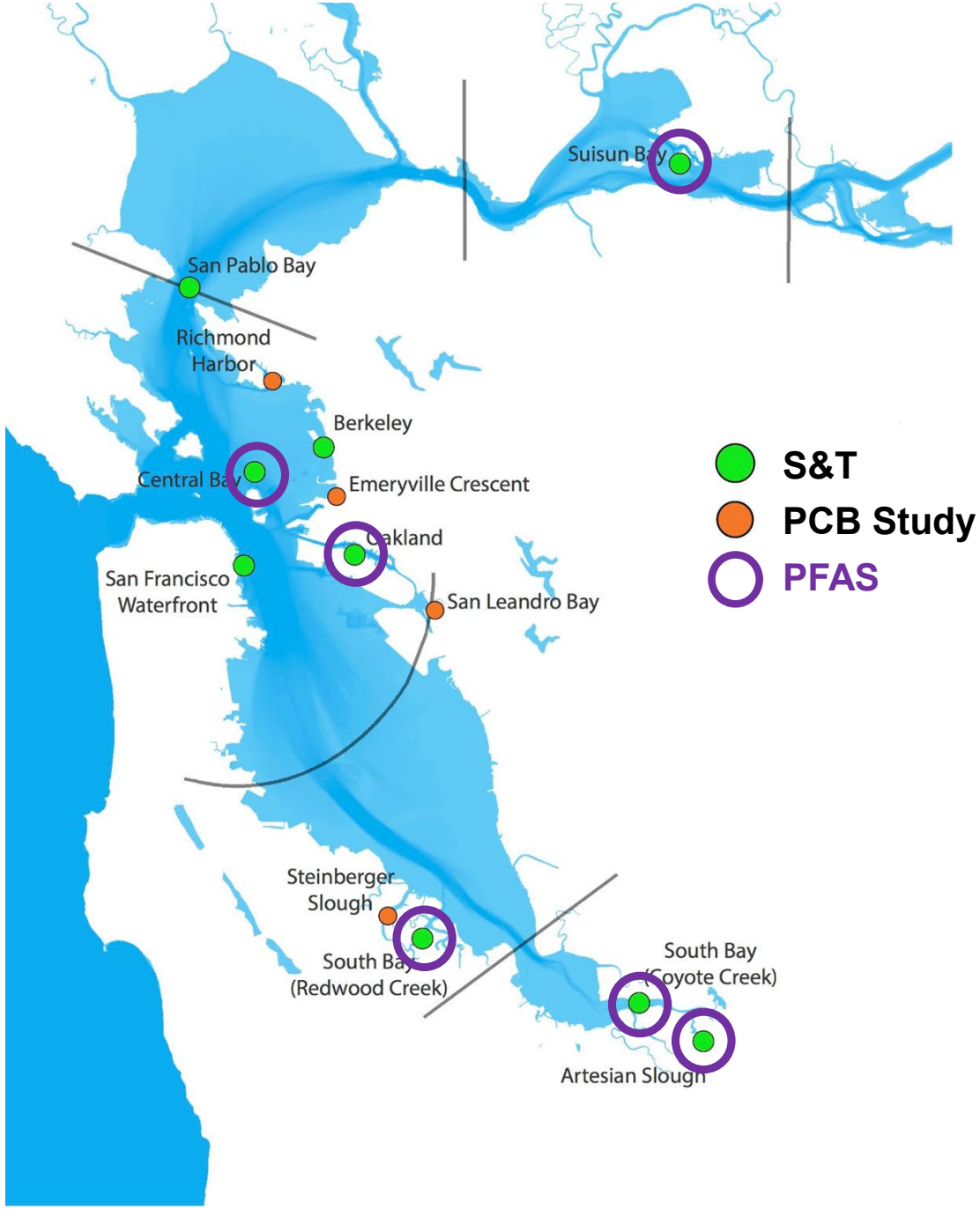
RMP Sport Fish Monitoring

- One of the best fish monitoring programs anywhere
- Began in 1994
- Most recently in 2019
  - 5-year cycle
  - 13 locations
  - Range of species (16 in 2019)
  - Hundreds of samples
  - Many contaminants
- Gaps remain



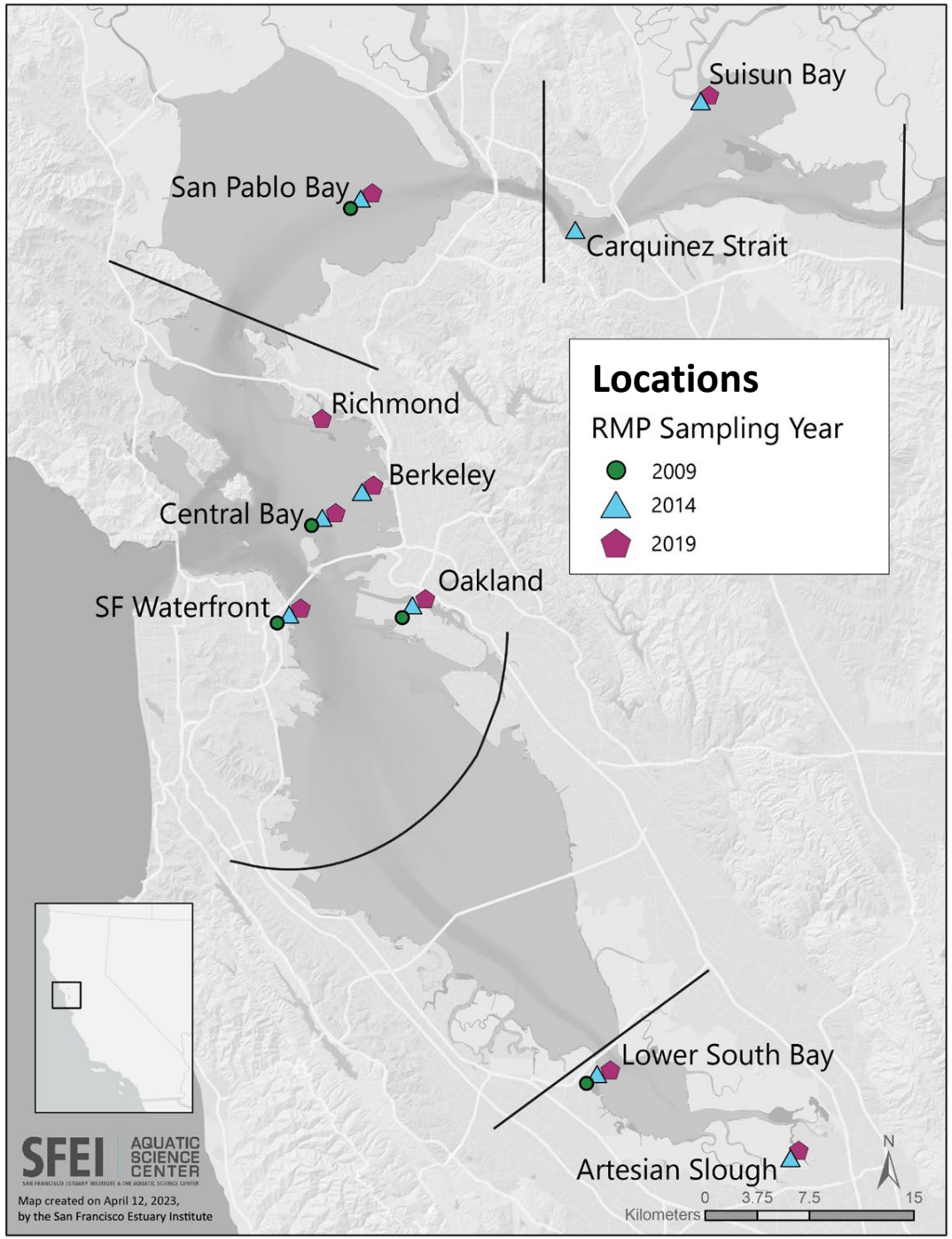
RMP ***PFAS*** Sport Fish Monitoring

- One of the best PFAS fish monitoring programs anywhere
- Began in 2009
- Most recently in 2019
  - 6 locations
  - 5 species
  - 111 fish
  - Only 16 samples
- Bigger gaps remain



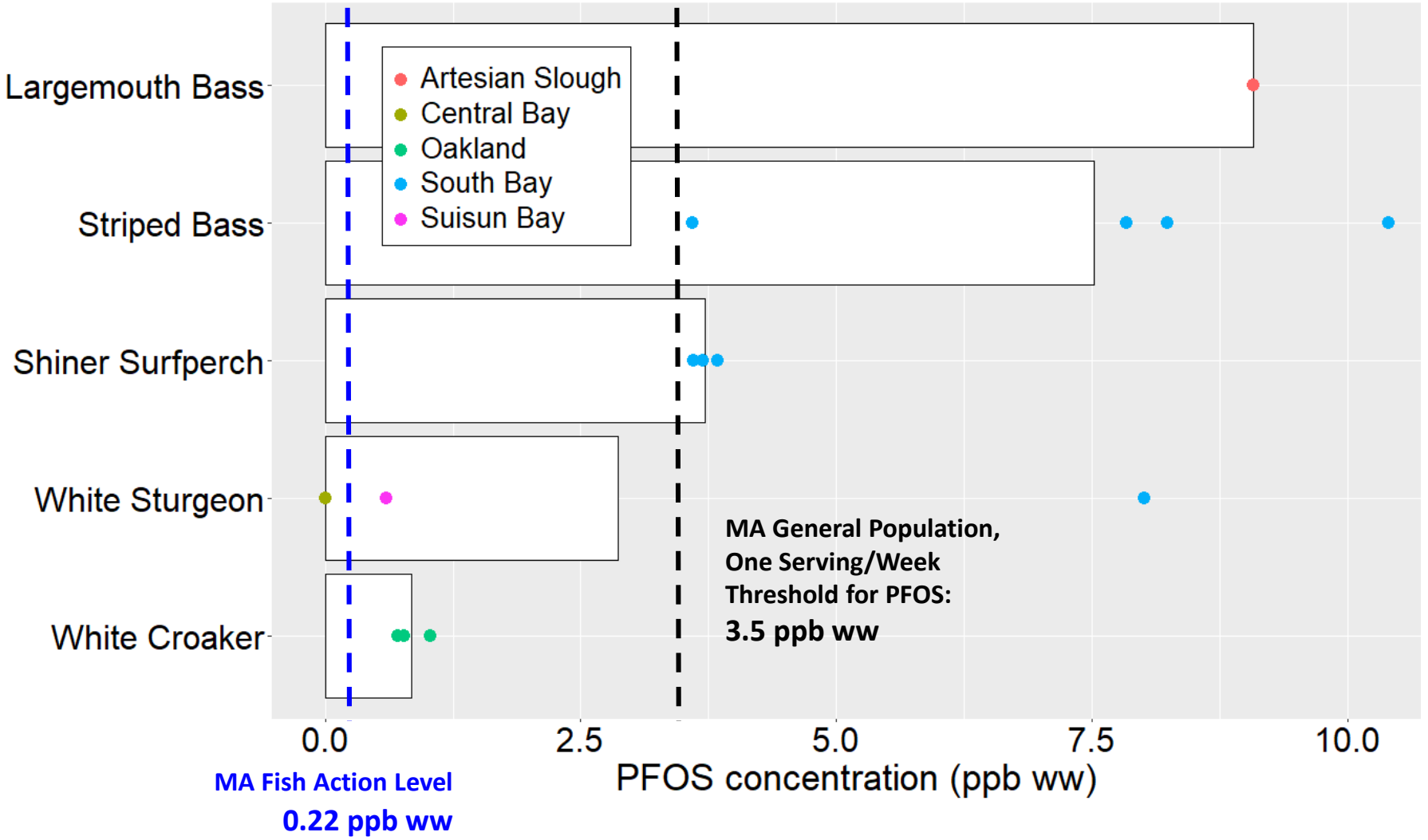
RMP *PFAS* Fish Monitoring **2022 Update**

- Analysis of 56 archived samples from 10 Bay locations
  - 4 species
  - 2009: 7 samples
  - 2014: 28 samples
  - 2019: 21 samples
- Targeted method for 40 PFAS
- Analysis of combined dataset
  - Varying analytical methods



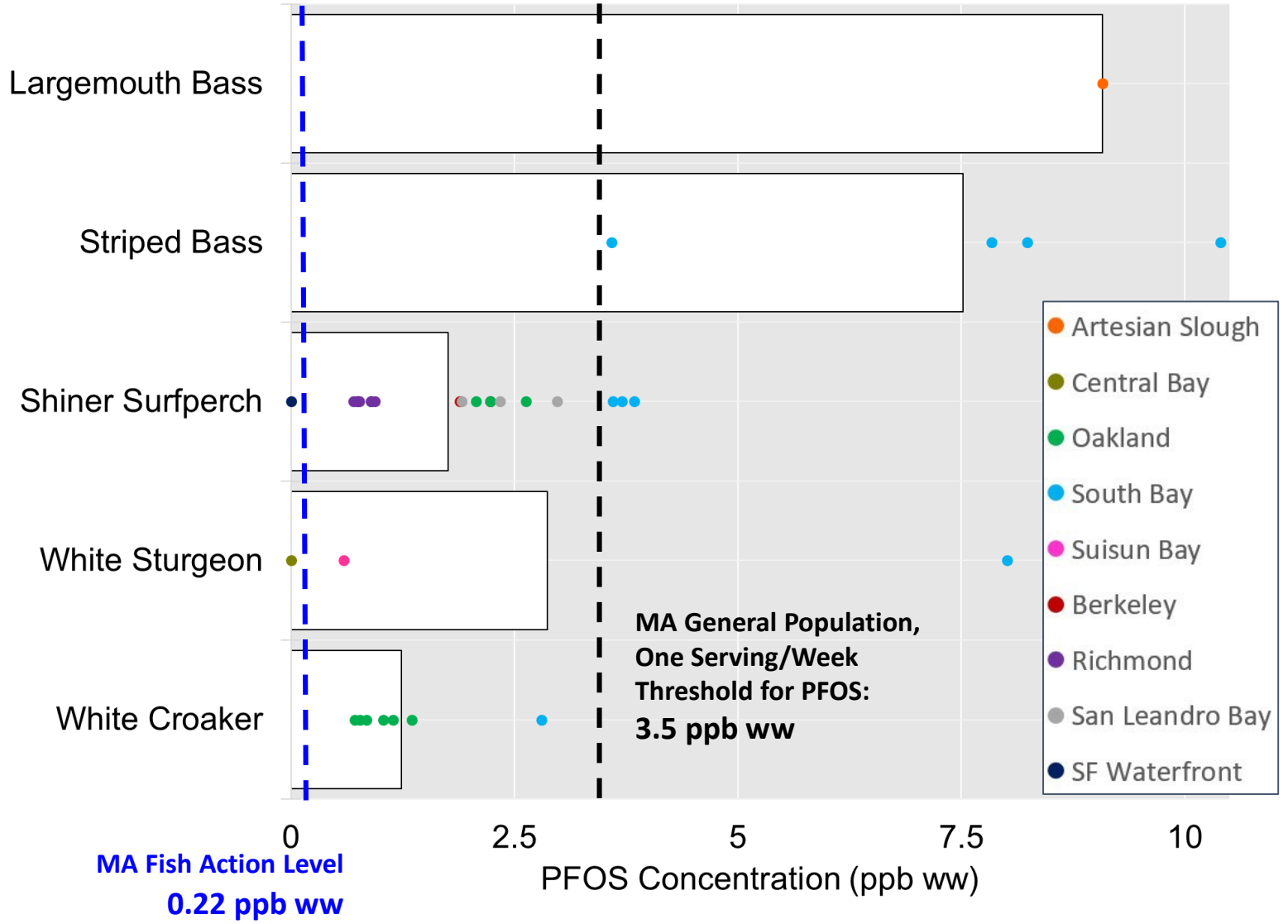
PFOS Concentrations in Bay Sport Fish (2019): Initial Dataset

- Limited dataset
  - 16 samples
- CA does not have a threshold
- All South Bay samples and three averages above threshold

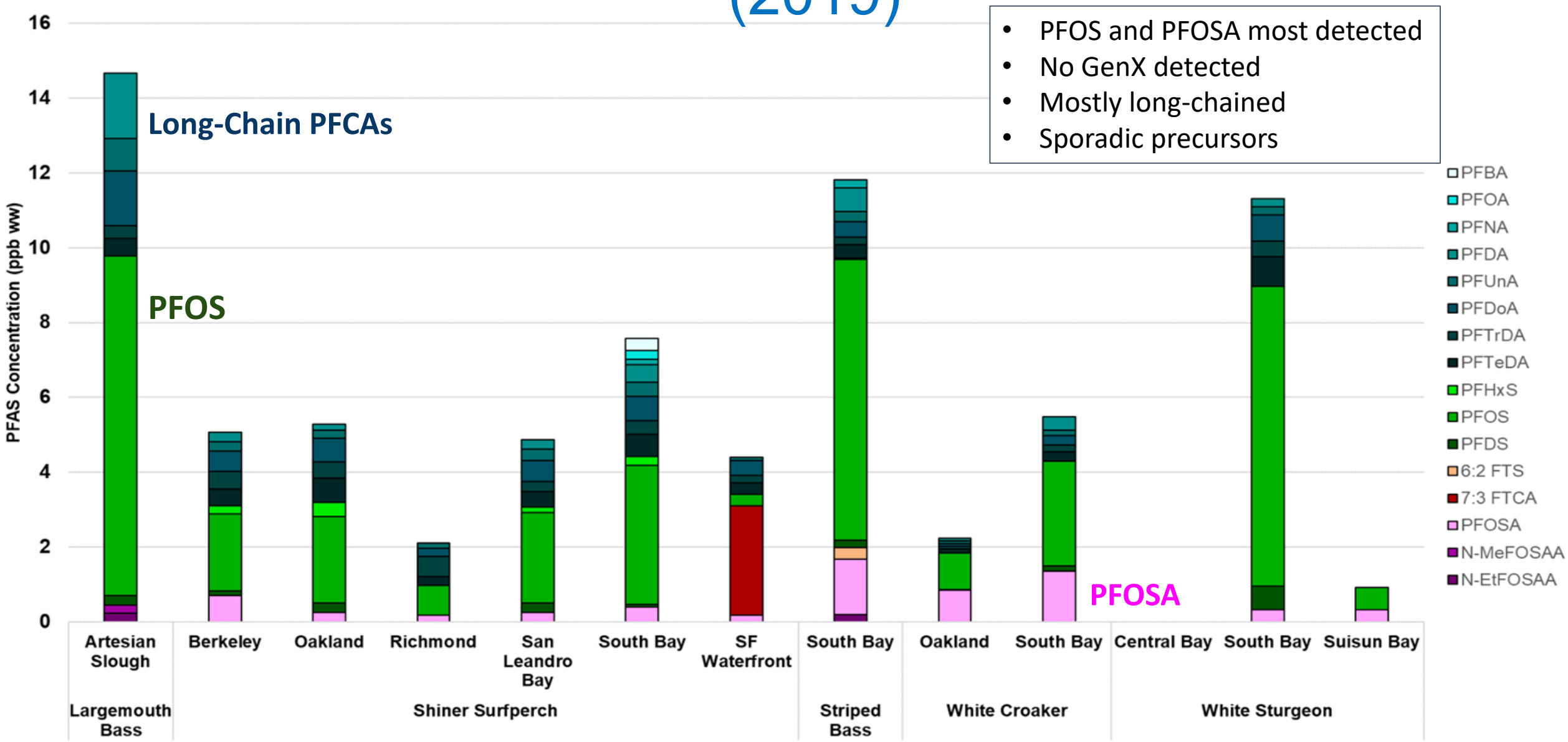


PFOS Concentrations in Bay Sport Fish (2019): Expanded Dataset

- Larger dataset
  - *35* samples for 2019
- CA still does not have a threshold
- *Most* South Bay samples and *two* averages above threshold
- 26% of all samples above 3.5 ppb
  - All from South Bay
  - Similar across all years



Average Sum of **PFAS** by Species and Location (2019)



- PFOS and PFOSA most detected
- No GenX detected
- Mostly long-chained
- Sporadic precursors

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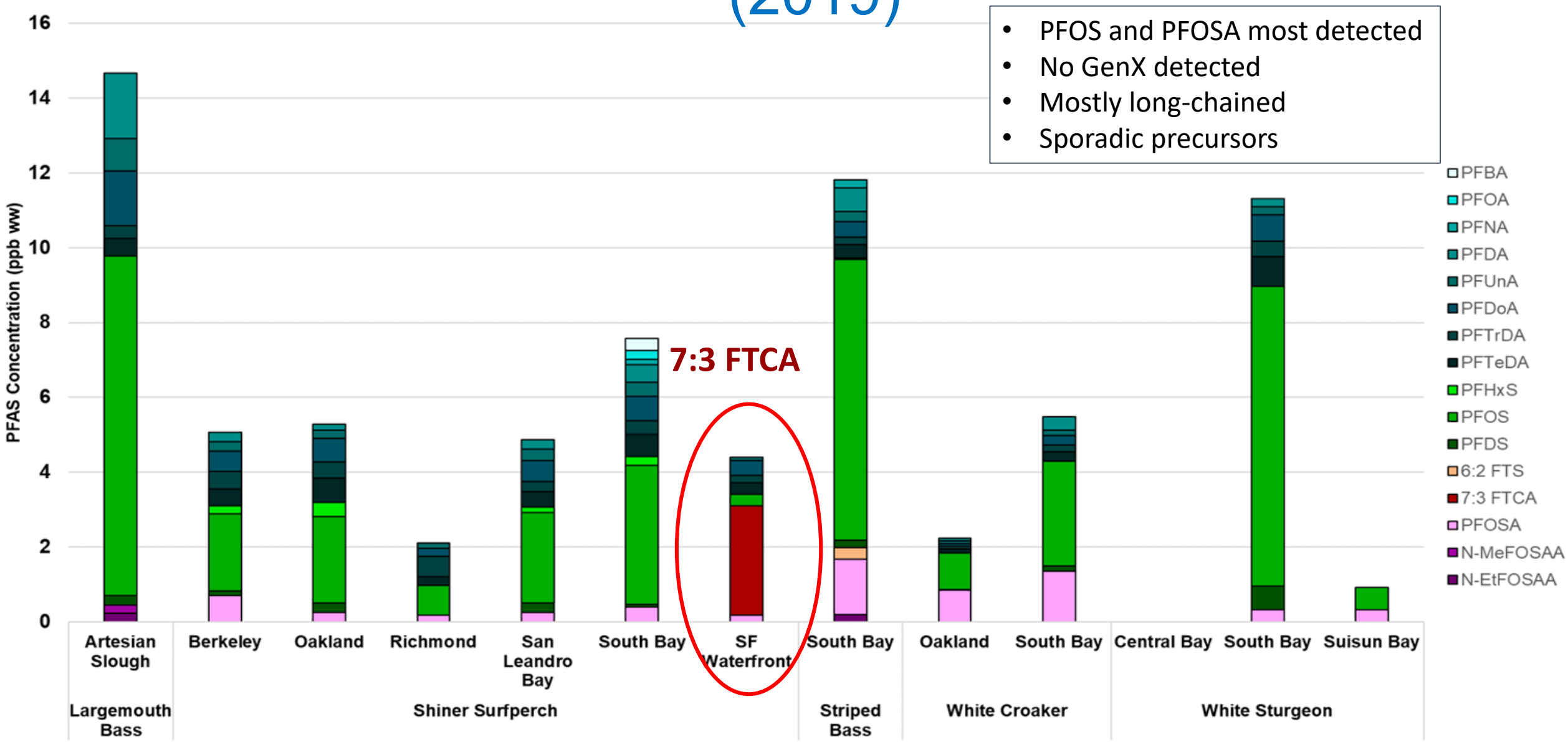

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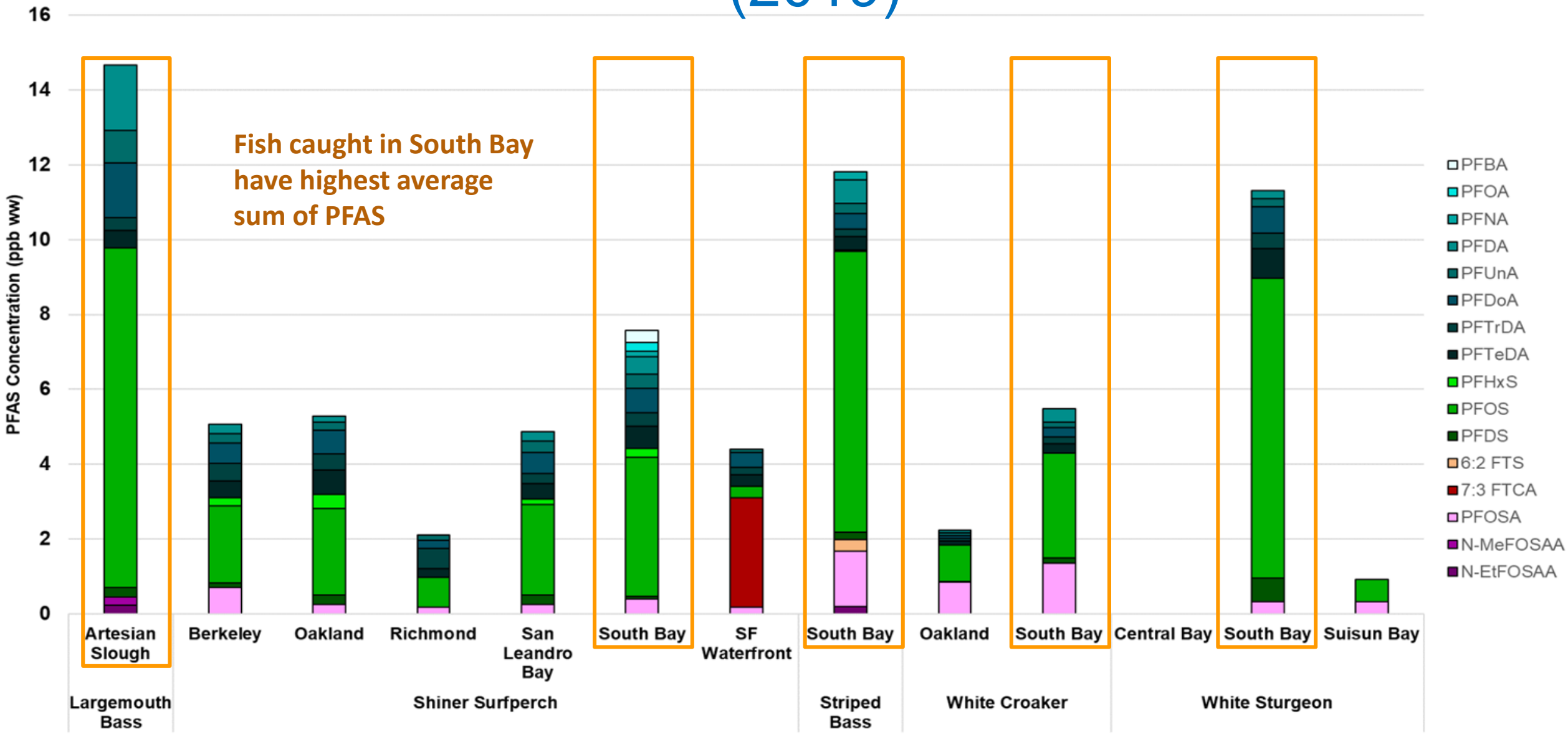
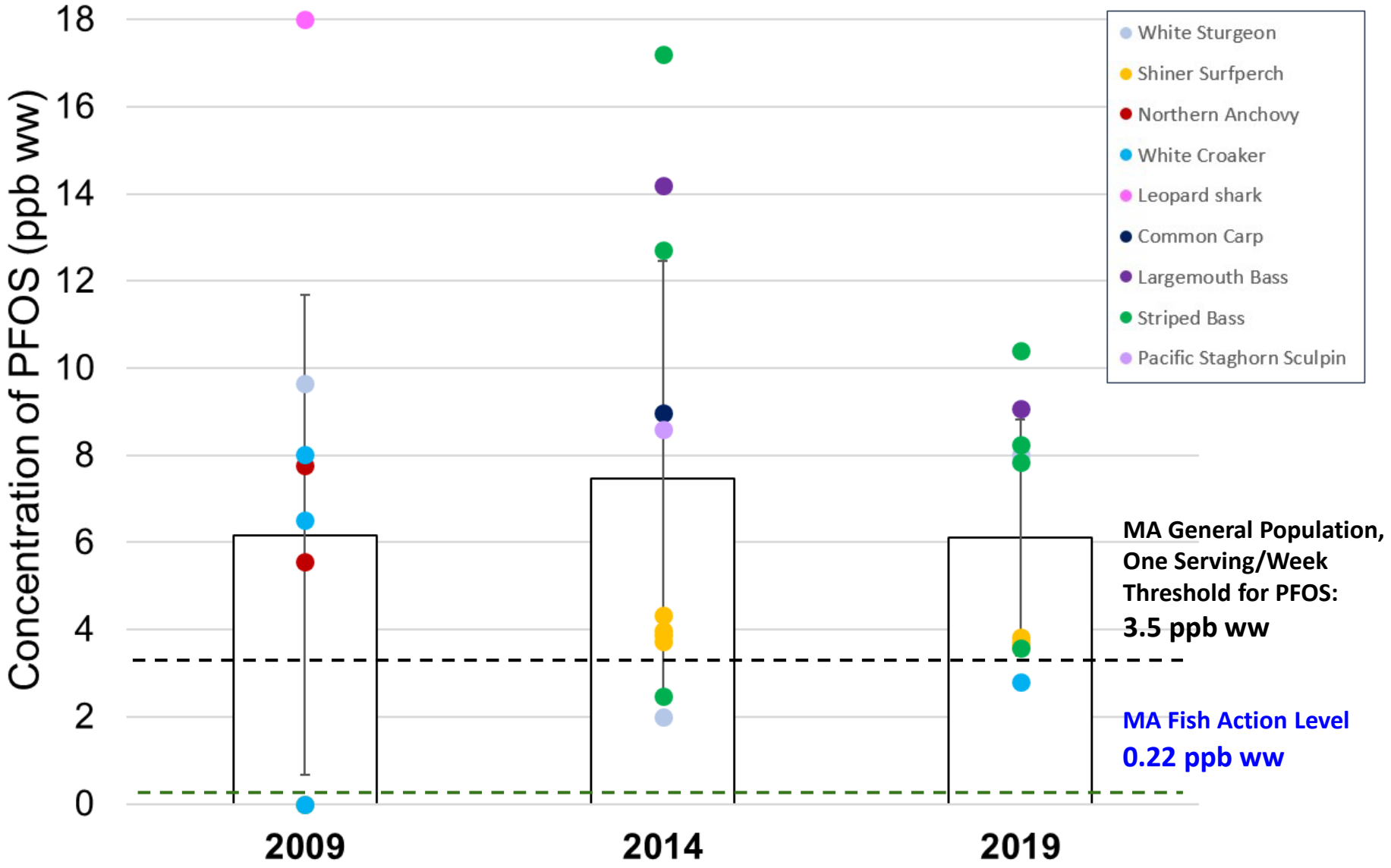


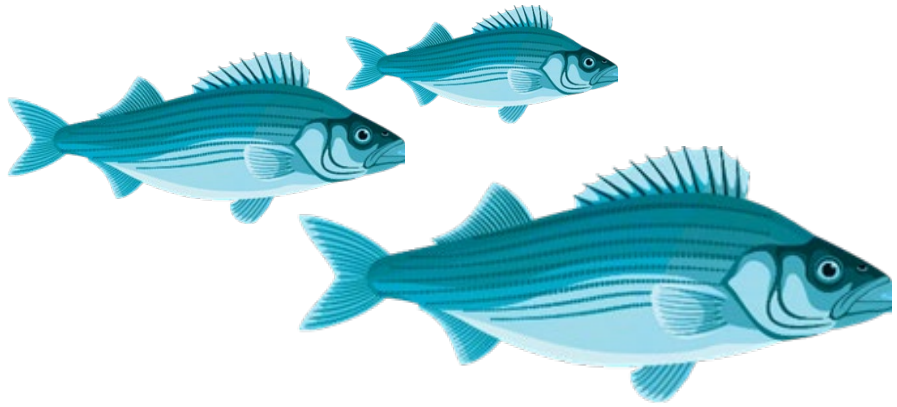
PFOS in South Bay Fish Over Time

- 81% of all sampled South Bay fish above MA weekly threshold
- Spotty dataset
- PFOS appears to be persisting over time, in spite of ban



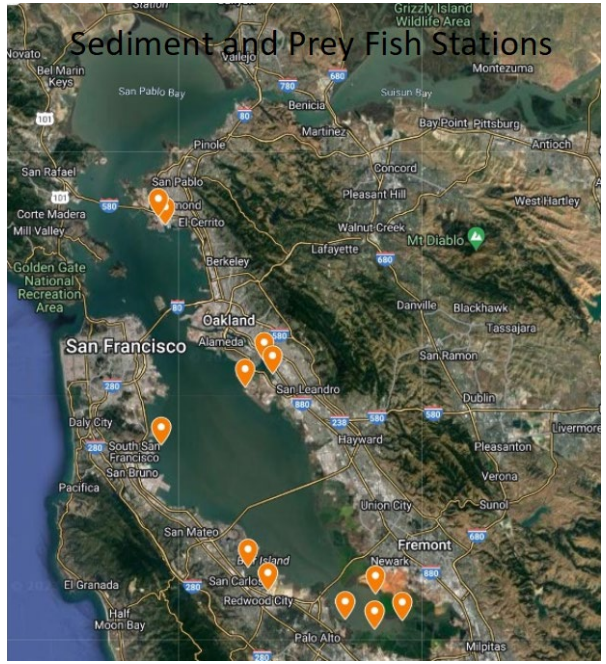
Key Takeaways

- We are building a strong dataset for the Bay
- PFAS are in Bay fish
- PFOS predominates
- Levels are well above consumption thresholds established by other states
- South Bay appears to have higher levels that are persisting over time
- Draft Report (November 2023)
- Manuscript (January 2024)



What's Next: RMP

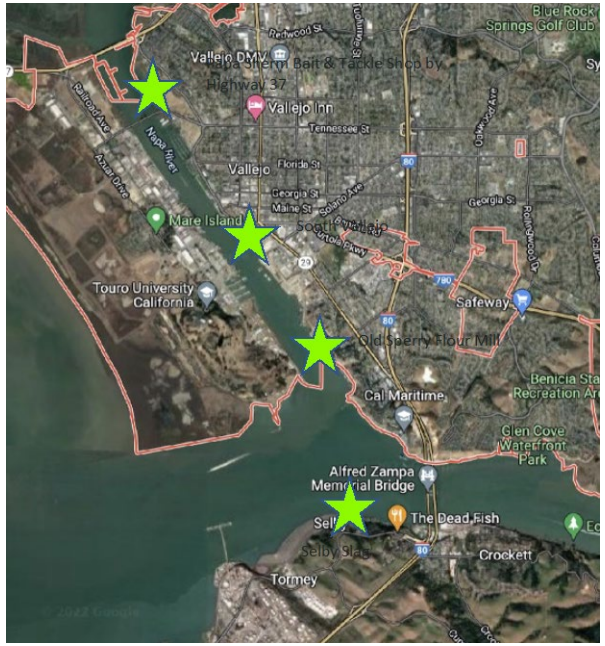
- Pilot monitoring of prey fish this summer (August 2023)

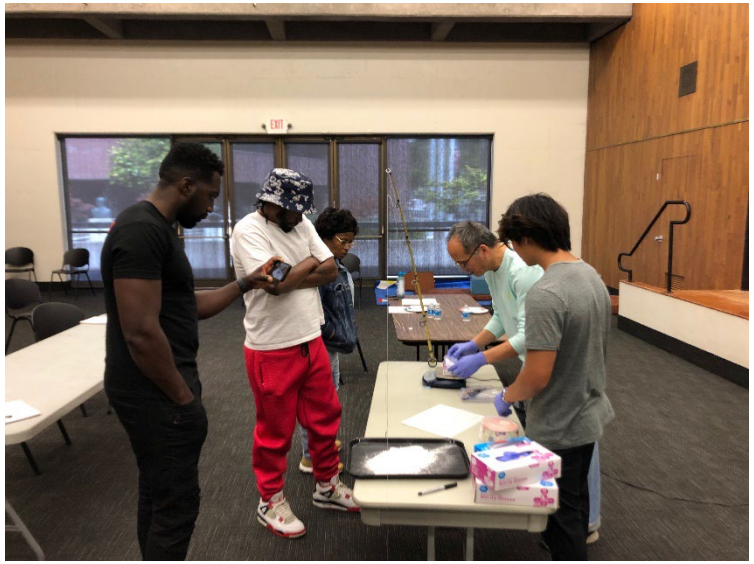


- RMP sport fish monitoring in 2024

What's Next: Other Projects

- All Positives Possible Carquinez Strait Project (2023)
- State Water Board "Realignment": community-driven monitoring in the Bay region (2025)
- Consumption survey questionnaire development – workshop with communities on Nov 3





Acknowledgements

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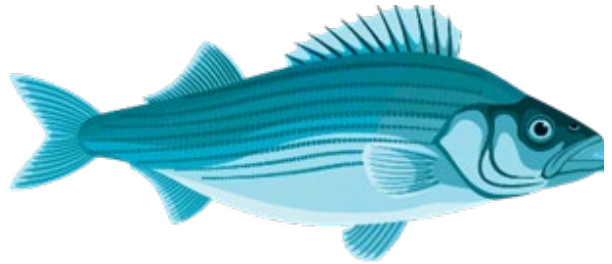
- Autumn Bonnema
- Wes Heim
- Richard Grace

Others

- RMP Sport Fish Strategy Team

Funding

- RMP
- Region 2



For More Information

- RMP Fish Monitoring
  - jay@sfei.org
- OEHHA Fish Advisories
  - oehha.ca.gov/fish/advisories
- 2019 Technical Report on RMP Fish Monitoring
  - www.sfei.org/documents/contaminant-concentrations-sport-fish-san-francisco-bay-2019
- RMP Data on Fish and Other Parameters
  - cd3.sfei.org
- SWAMP Bioaccumulation Realignment/Safe to Eat Workgroup
  - bit.ly/BioaccumulationPrgm_Realignment
- SFEI PFAS Monitoring
  - www.sfei.org/projects/pfas