



BACWA Board Meeting

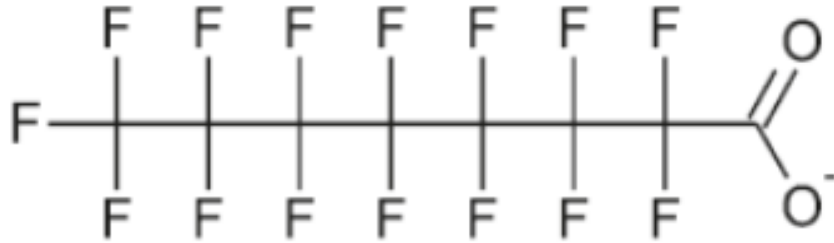
Regional PFAS Monitoring

Rebecca Sutton and Diana Lin
August 21, 2020

Poly- and Perfluoroalkyl Substances (PFAS)

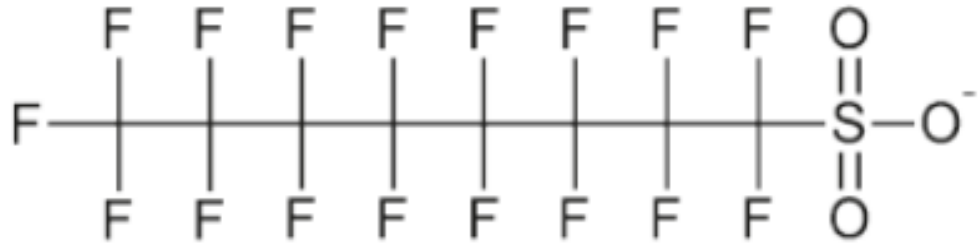
PFOA

Perfluorooctanoic acid



PFOS

Perfluorooctane sulfonate



State Water Board Investigation Orders

PFAS concerns

- Contamination of drinking water sources
- Ecological impacts

Monitoring required at facilities >1 MGD

- Quarterly monitoring of influent, effluent, ROC, and biosolids

Region 2 will conduct a regional study

- Not included in 13267 letter

Advantages of Regional PFAS Study coordinated by SFEI

Inform region-wide understanding

- (Nearly) all effluent goes to the Bay

Develop study design that is efficient and informs management actions

- Reduce unnecessary costs, resources
- Region-wide QA/QC, data management
- Investigate sources of PFAS

Gain insights from RMP PFAS studies



CECs in San Francisco Bay

High Concern moderate or high impact	None currently
Moderate Concern low impact	PFAS Alkylphenols, Alkylphenol Ethoxylates Fipronil, Imidacloprid, Bisphenols Organophosphate Esters, Microplastics
Low Concern limited impact	PBDEs and HBCD Pharmaceuticals, Pyrethroids* Personal Care & Cleaning PBDDs / PBDFs
Possible Concern uncertainty as to impact	Alternative Flame Retardants Pesticides, Plastic Additives, QACs Siloxanes, SDPAs, UV-BZTs, others



Stormwater (ongoing)

Bay Water 2021



Phased Study Approach

Phase 1: Monitor up to 15 facilities (Q4 2020)

SFEI will:

- Prepare sampling and analysis plan
- Coordinate sample collection by facilities
- QA and upload commercial lab data
- Analyze data, prepare report with Phase 2 monitoring design recommendation

Phase 2: Additional monitoring to support evaluation of PFAS occurrence, trends, and/or source identification

Phase 1 Tasks

- 1. Project Management**
- 2. Sampling and Analysis Plan
Development and Implementation**
- 3. Data Management and QA/QC Review**
- 4. Data and Report Upload to GeoTracker**
- 5. Results Summary and Phase 2
Recommendations**



Task 2: Sampling and Analysis Plan

Select 10-15 POTWs for participation

- Largest facilities
- A few medium and small facilities

Sample collection instructions, webinar

- Influent, effluent, RO concentrate, biosolids
- Products and conditions to avoid

Coordinate sample collection (Q4 2020)

Targeted analysis (31 required PFAS)

- Optional analytes may be included
- Total Oxidizable Precursors (TOP) assay on biosolids, influent

Task 3: Data Management & QA/QC

Laboratory coordination

- **EDD templates for reporting**

Data formatting and QA/QC

- **Dept of Defense QSM criteria**

Collect forms and documentation for reporting

Task 4: GeoTracker Reporting

SFEI will upload analytical results and monitoring report on behalf of BACWA and participating facilities

SFEI will need:

- **Authorization from participating facilities**
- **GeoTracker username and Global ID**
- **Flow measurements, ancillary information**

Task 5: Data Analysis, Reporting, Recommendations

PFAS concentrations in influent, effluent, ROC, and biosolids

Explore relationships between service population characteristics and influent PFAS

- **Indication of unique and/or elevated PFAS**

Trends relative to monitoring in 2014 and earlier

Recommendations for Phase 2

What about Phase 2?

Late Aug., 2020: Finalize SOW, and contract with BACWA. Questionnaire about facility service population to inform sampling

Sept., 2020: Sampling Plan, Review by BACWA and Water Boards

- One-time PFAS target analysis of influent, effluent, ROC, biosolids
- One-time total oxidizable precursor analysis of influent and biosolids

Oct. – Nov., 2020: Phase 1 Monitoring (dry weather)

Jan.-Feb. 2021: Receive Laboratory Data, QA, Data upload

Early May 2021: Summary presentation and recommendations for Phase 2 monitoring, review and comments from BACWA and Water Boards



Possible Phase 2 Study Questions

<p>Decision: What subset of facilities warrant a second-round of influent, effluent monitoring?</p> <p>-----></p> <p>Conduct second-round monitoring at subset of facilities, particularly largest facilities, those with historic data (trends), and possibly additional medium or small facilities if patterns different from large facilities.</p>	<p>Decision: Do variations in biosolid concentrations warrant additional monitoring and at more facilities?</p> <p>-----></p> <p>Conduct follow-up biosolids monitoring at subset or all facilities.</p>	<p>Decision: Do data indicate significant presence of precursors?</p> <p>-----></p> <p>Conduct additional target, TOF, TOP, suspect screening, analysis in influent, effluent, biosolids (Collaboration with UC Davis)</p>	<p>Decision: Do results indicate PFAS patterns from different service populations? Do data indicate unusual analytes or patterns that indicate unique sources?</p> <p>-----></p> <p>Investigate possible unique sources in sewershed (target, TOP on influent) (Collaboration with specific facilities)</p>
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Summer 2021: Phase 2 SOW, Sampling Plan, Review by BACWA and Water Boards

Summer/Fall 2021 Phase 2 Monitoring



Phase 1 Budget: SFEI Labor

Task	Description	Budget
1	Project Management	\$1,800
2	Sampling and Analysis Plan Development and Implementation	\$13,000
3	Data Management and QA/QC Review	\$23,000
4	Data and Report Upload to GeoTracker	\$4,200
5	Preliminary Data Analysis and Technical Memo	\$23,000
	Total	\$65,000



Phase 1 Timeline

- **Aug 21: Approve SOW**
- **Aug 26: Send POTW Questionnaire, responses needed within 2 weeks.**
- **Sept 25: Draft Sampling and Analysis Plan. Review by BACWA and Water Boards**
- **Oct 28: Final Sampling and Analysis Plan**
- **Oct 28 – Nov 30: Sample Collection**

Cost Comparison

Individual POTW (13267 order)

- \$5K - \$25K per facility
- Estimated cost for Region 2: \$685K

Regional Approach

- Phase 1: \$65K (SFEI) + \$70K (lab est.)
\$135K
- Phase 2: \$80-110K + \$80-\$190K =
\$160K-\$300K
- Total: \$295-\$435K





Thank you

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Backup slides

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Summer/Fall 2021 Phase 2 Monitoring



Biosolid collection

- “Sampling for biosolids after all treatment processes have been completed shall be made either prior to post biosolids harvesting for dewatering and disposal/reuse.
- “Also include the class of biosolids sampled in the report”
- “A representative whole sample aliquot (both fraction) will be collected, analyzed by the laboratory, and reported ng/kg.”



POTW Questionnaire

Developed by the State Water Board

Essential tool for site selection, source identification

Identifying information required:

- **Waste Discharger Identification Number**
- **GeoTracker Global ID**
- **Contact information for sampling and reporting**

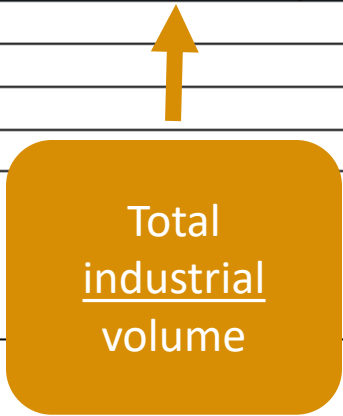
Types of Wastewater Inflow and Volume Percentages

2(a). Estimate relative contribution for each type of wastewater (e.g. Residential/Commercial, industrial) entering the treatment plant based on calendar year 2019 flows.

_____ % Residential/Commercial _____ % Industrial

2(b). If wastewaters are received from industrial sources, provide the types of industries that are contributing flow and the estimated percentage for the calendar year of 2019 in the following table. If the types of industries are not correlative to the data collected at your facility, please provide the industry types and correlative volume percentages in the blank lines provided.

Industry Types – Influent Flow	Continuous Flow? (Yes/No/)	Periodic Flow? (Yes/No)	Non-Routine Influent Flow? (Yes/No)	2019 - Estimated Industrial Total Volume by Percentage (>5% of the total volume)
Airports				
Agricultural				
Automatic Vehicle Washing				
Breweries and Wineries				
Electronic Manufacturing (e.g., electronic components, semiconductors, capacitors, batteries)				
Fabricated Metal Products (e.g. chrome plating, electroplating, plating, polishing, anodizing, and coloring)				
Fire Training Centers				



Sewage Sludge and Biosolids

5(a). What is the amount of sewage sludge and biosolids (by class type) produced in the calendar year of 2019?



Amount discharged by the facility

Type	Amount Produced in Calendar Year 2019
Sewage Sludge – Any solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a municipal wastewater treatment facility. It includes solids removed or used during primary, secondary, or advanced wastewater treatment processes. It does not include grit or screening material generated during preliminary treatment of domestic sewage at a municipal wastewater treatment facility. Sewage sludge does not include biosolids that meet the criteria in Table 1 of 40 Code of Federal Regulations section 503.13.	_____ dry metric tons
Class A – Biosolids meeting the vector attraction, and meeting pollution concentration limits specified in 40 CFR Part 503 and pathogen reduction standards specified in 40 CFR Part 503.32(a).	_____ dry metric tons
Class A EQ (Exceptional Quality) – Biosolids which meet metals standards, Class A pathogen reduction standards, and vector attraction reduction standards contained in 40 CFR Part 503.13(3), 40 CFR Part 503.32(a), and 40 CFR Part 503.33(b)(1-8), respectively.	_____ dry metric tons
Class B – Biosolids which meet the vector attraction and meeting pollution concentration limits specified in 40 CFR Part 503 and pathogen reduction standards specified in 40 CFR Part 503.32(b).	_____ dry metric tons



Landfill Leachate

6(a). Has your facility accepted landfill leachate?

- YES
- NO

6(b). If yes to 6(a)., please use the table below to provide the name of landfill, years accepted, and estimated volumes for the past 5 years.

Landfill Name	Years Accepted	Estimated Volumes per year (gallons per 365-day period)
1.	_____ to _____	_____ gallons/year
2.	_____ to _____	_____ gallons/year
3.	_____ to _____	_____ gallons/year
4.	_____ to _____	_____ gallons/year



Years when leachate was accepted at the facility

POTW Questionnaire

Treated Wastewater Storage Basins

3(a). Does your facility utilize storage basins (non-percolation) for treated wastewater? If yes, how many?

- YES How many? _____
 NO

3(b). If yes to 3(a), how many basins are unlined?

How many? _____

Are there leak detections systems installed?

- YES How many basins? _____
 NO How many basins? _____

3(c). If yes to 3(a), what is the frequency of use?