

Handout for Senate Natural Resources Committee

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Perfluoroalkyl Substances (PFAS) Statewide Sampling Plan

J U N E 2 0 1 9

Act 21:

- Required sampling of public community water systems and Non-Transient Non-Community (NTNC) systems
 - NTNC includes schools and other water systems serving the same 25 people or more for 6 months per year or more.
- Follow the rule-making process to develop and adopt drinking water standards
- Issue a plan to regulate PFAS substances in surface waters
- Develop and implement a plan to investigate potential sources of PFAS

Perfluoroalkyl Substances (PFAS) Statewide Sampling Plan

J U N E 2 0 1 9

PFAS Impact Monitoring

Public Water Supply Sampling

Surface Water Sampling

PFAS in Waste Streams

Landfills

Wastewater Treatment Facilities

Industrial or Intensive Uses

Electroplating

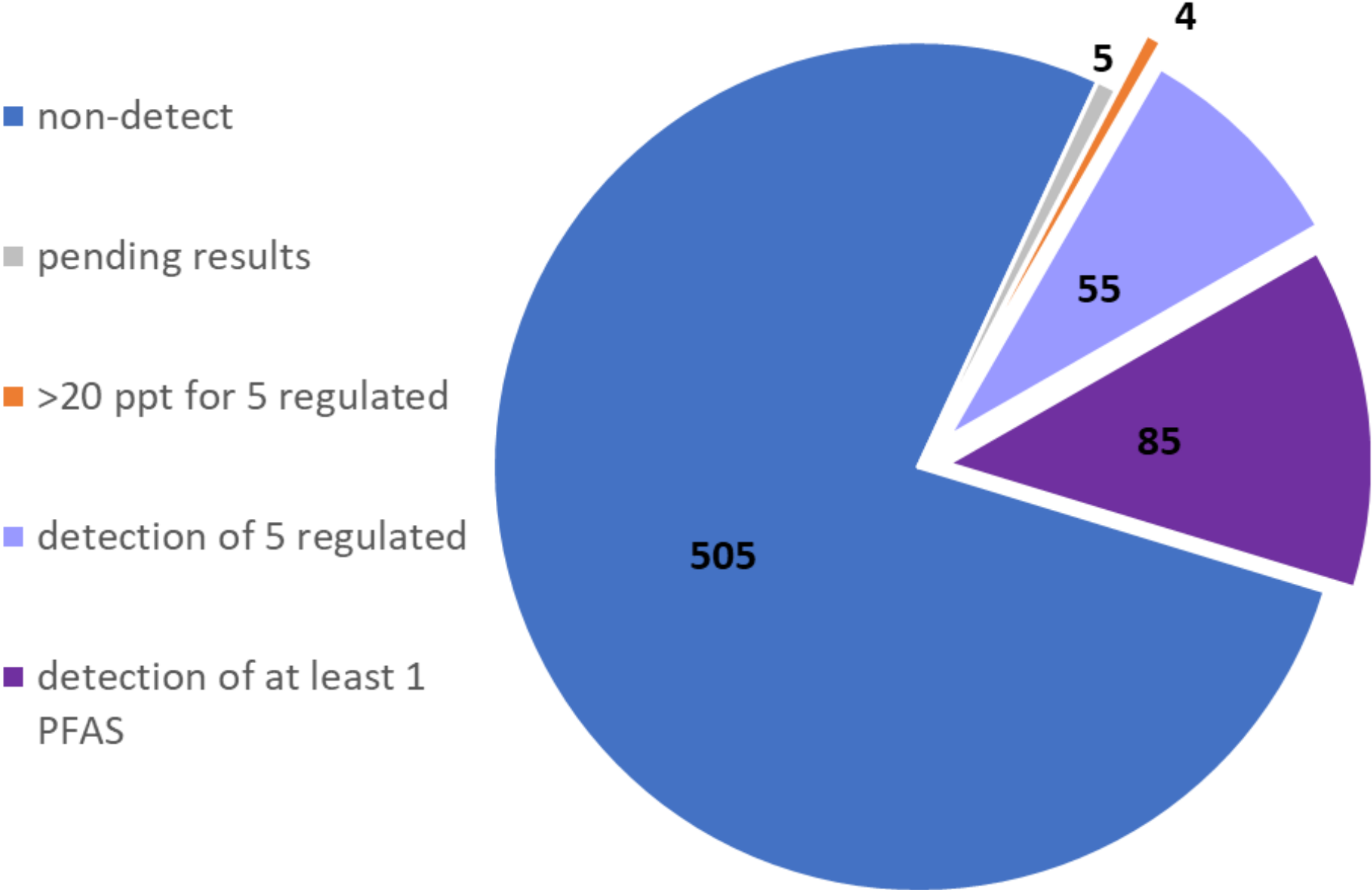
Car Washes

Perfluoroalkyl
Substances
(PFAS)
Statewide Sampling
Plan

J U N E 2 0 1 9



Impact Monitoring: Public Water System Testing



Impacted Public Drinking Water Systems

Do Not Drink Notice Required

- Mount Holly School
- Thetford Academy
- Killington Mountain School
- Fiddlehead Condominiums

Results between 15 - 20 ppt

- Kids in the Country*
- Craftsbury Fire District 2
- Windy Hollow Mobile Home Park
- Mountainside Resort (Stowe)
- Snowtree Condominium (Dover)

Elevated, but unconfirmed as of 2/13/20

- Killington Village Inn
(formerly Killington School of Resort Management)

* = confirmed below 20 ppt

Proposed Water Supply Rule Revisions

- Establishes:
 - Cumulative MCL at 20 ppt and MCLG at zero ppt for the 5 regulated compounds
 - Required analytical laboratory method (EPA 537.1 or alternate as approved by the Secretary)
 - On-going monitoring framework for public drinking water systems
 - Technical Standards for treatment

- Provides:
 - health language in response to a MCL exceedance, including distribution of 'Do Not Drink' notices

PFAS in Waste Streams

1. PFAS detected in nearly all wastes sampled, but largest loading likely from residentially source materials. There is no 'easy' source of PFAS to the landfill that can be removed from the waste stream.

2. PFAS detected at all WWTFs, even those not accepting landfill or industrial discharges

but...

PFAS concentrations at WWTFs that accept significant volumes of leachate are elevated.

3. Treatment of leachate for PFAS is feasible using proven technologies

but....

it would come with a cost and still has significant challenges with the management of treatment residuals.

PFAS in Waste Streams - Reports

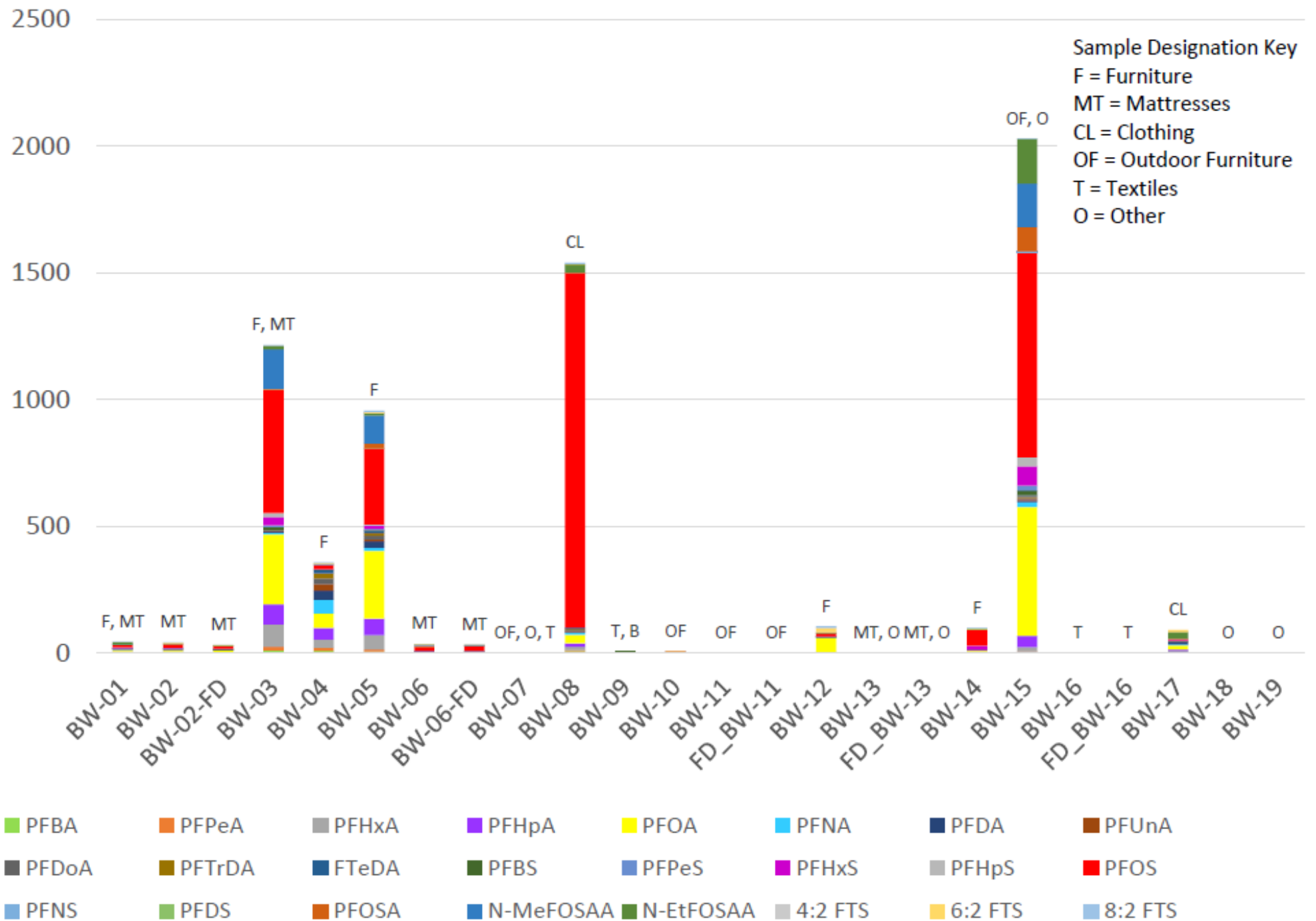
- Evaluation of PFAS within the waste streams disposed of at the New England Waste Services of Vermont (NEWSVT) landfill
 - Sanborn Head: PFAS Waste Source Testing Report, dated October 2019
- Statewide evaluation of PFAS within landfill leachate, wastewater treatment facility (WWTF) influent, effluent, biosolids and sludges
 - Weston and Sampson: Wastewater Facility and Landfill PFAS Sampling Summary report, dated January 2020
- Assessment of treatment options that would reduce or eliminate PFAS within landfill leachate
 - Brown and Caldwell: Conceptual Leachate Treatment Scoping Study for New England Waste Services of Vermont Landfill, dated October 2019

PFAS Going into the Landfill

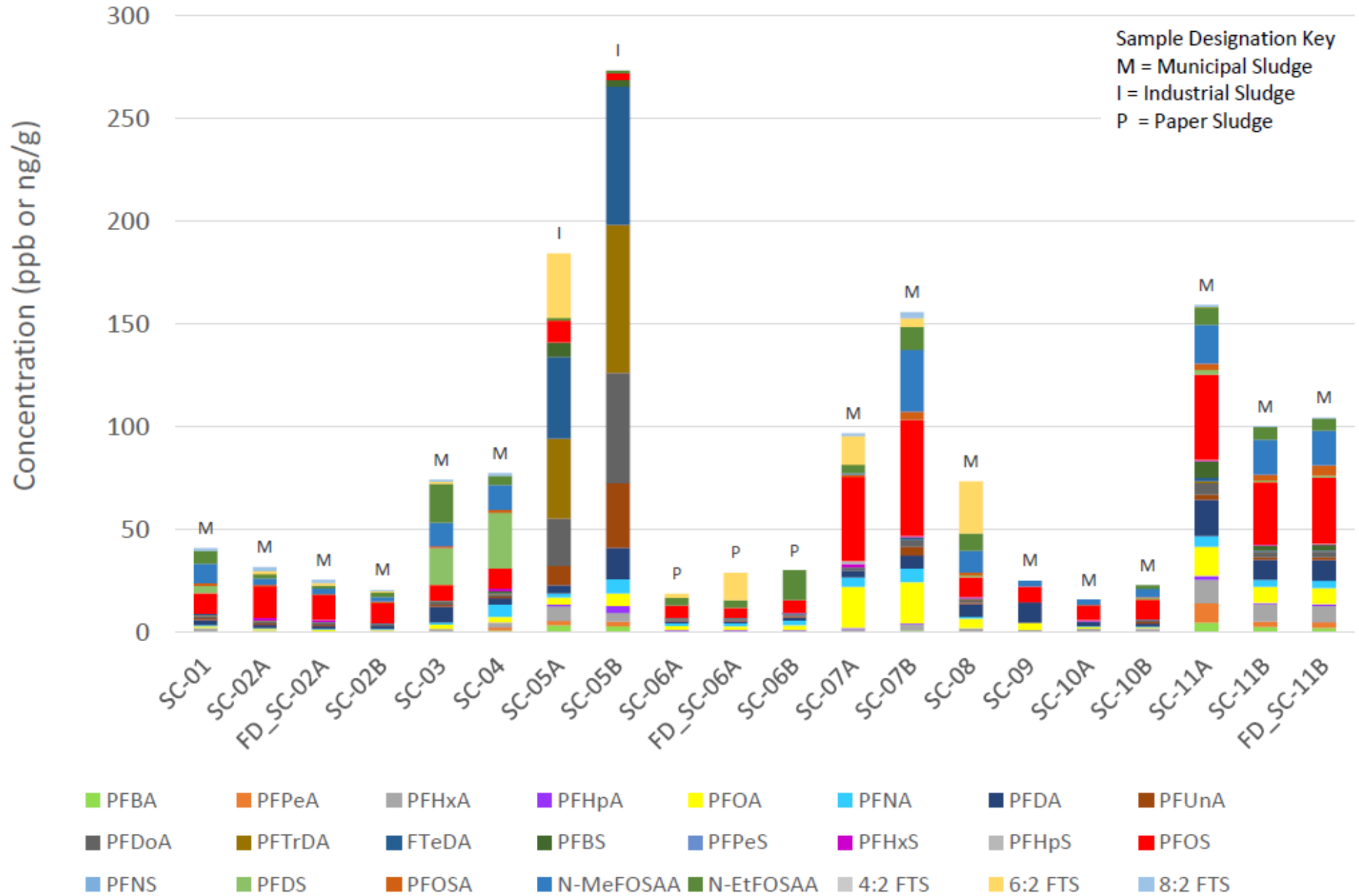
Bulk analysis of materials being disposed

Bulky Waste and Textiles

Concentration (ppb or ng/g)

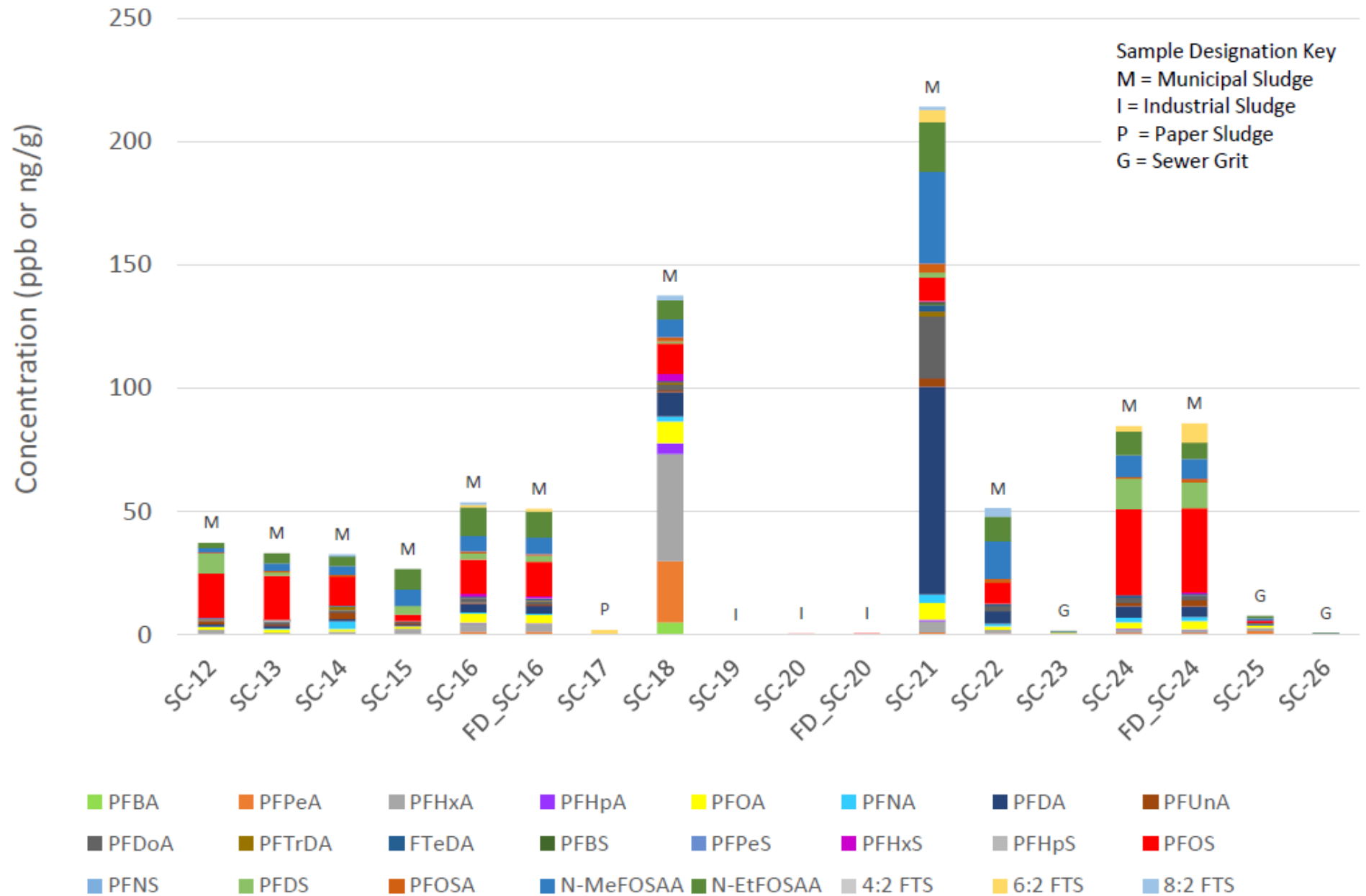


Sludges:
Industrial and
Municipal
 Fig. 1 of 2



Sludges: Industrial and Municipal

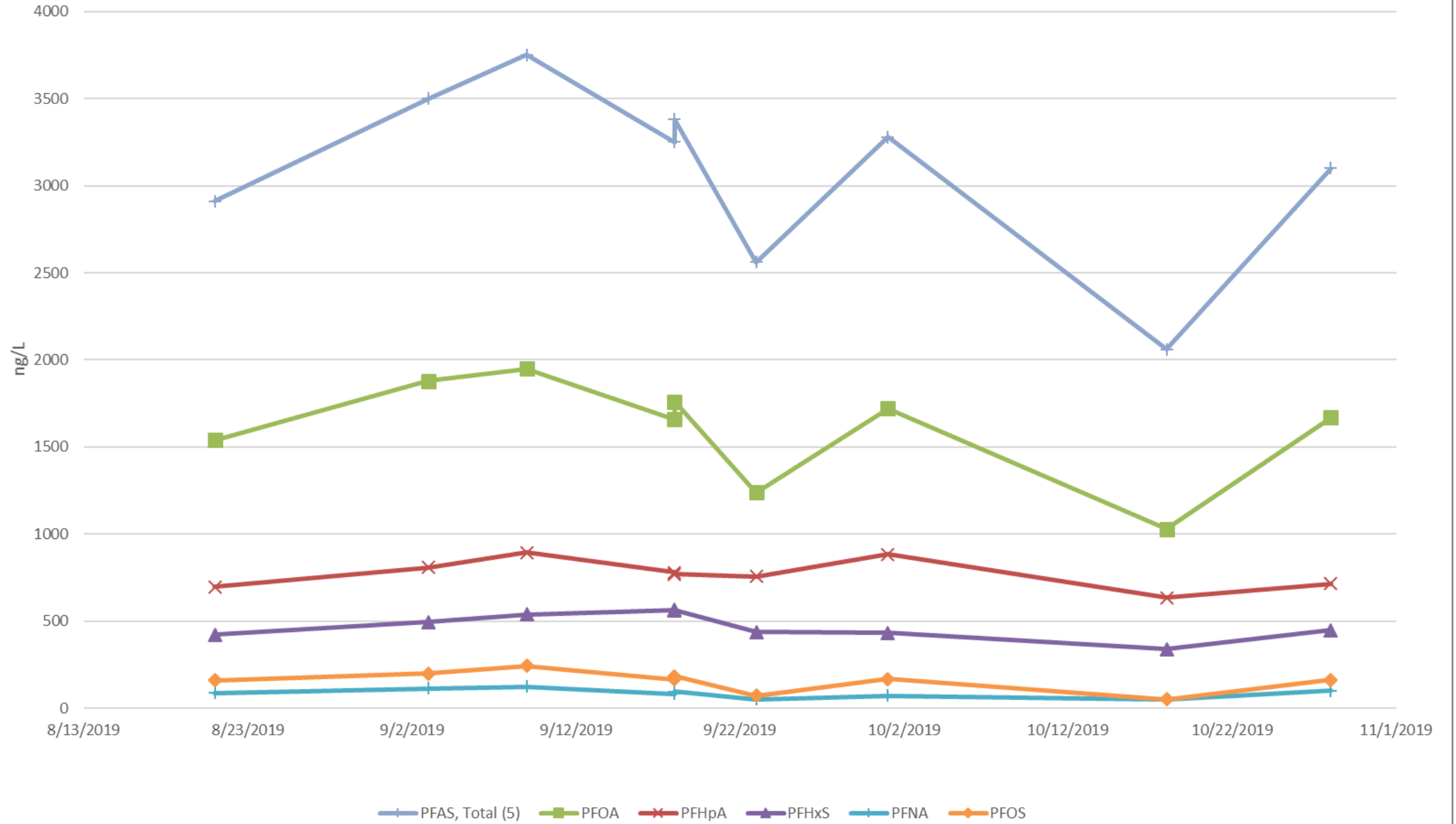
Fig. 2 of 2



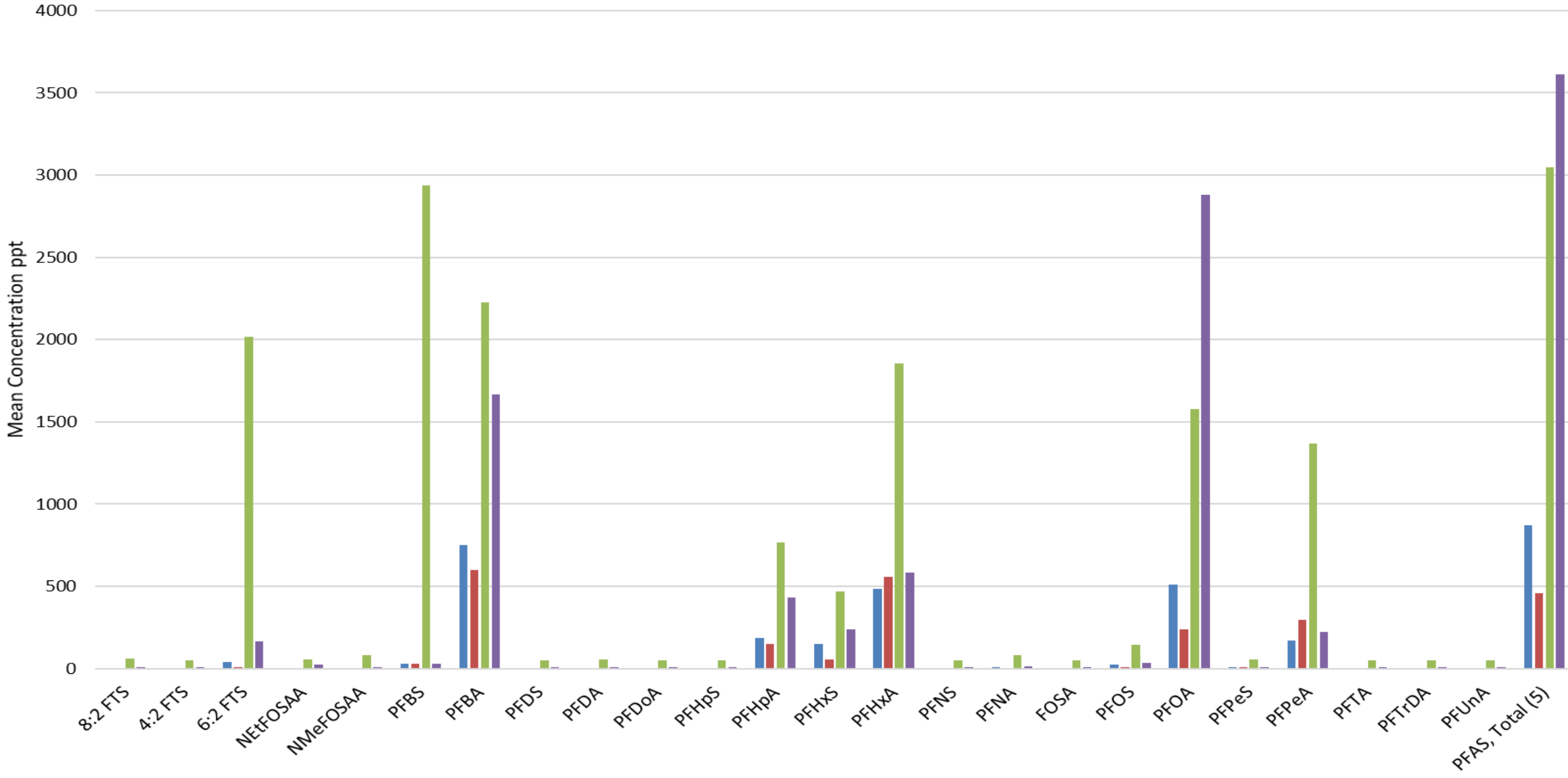
PFAS Coming Out of Landfills

Analysis of Leachate

NEWSVT Landfill Leachate



Landfill Leachate

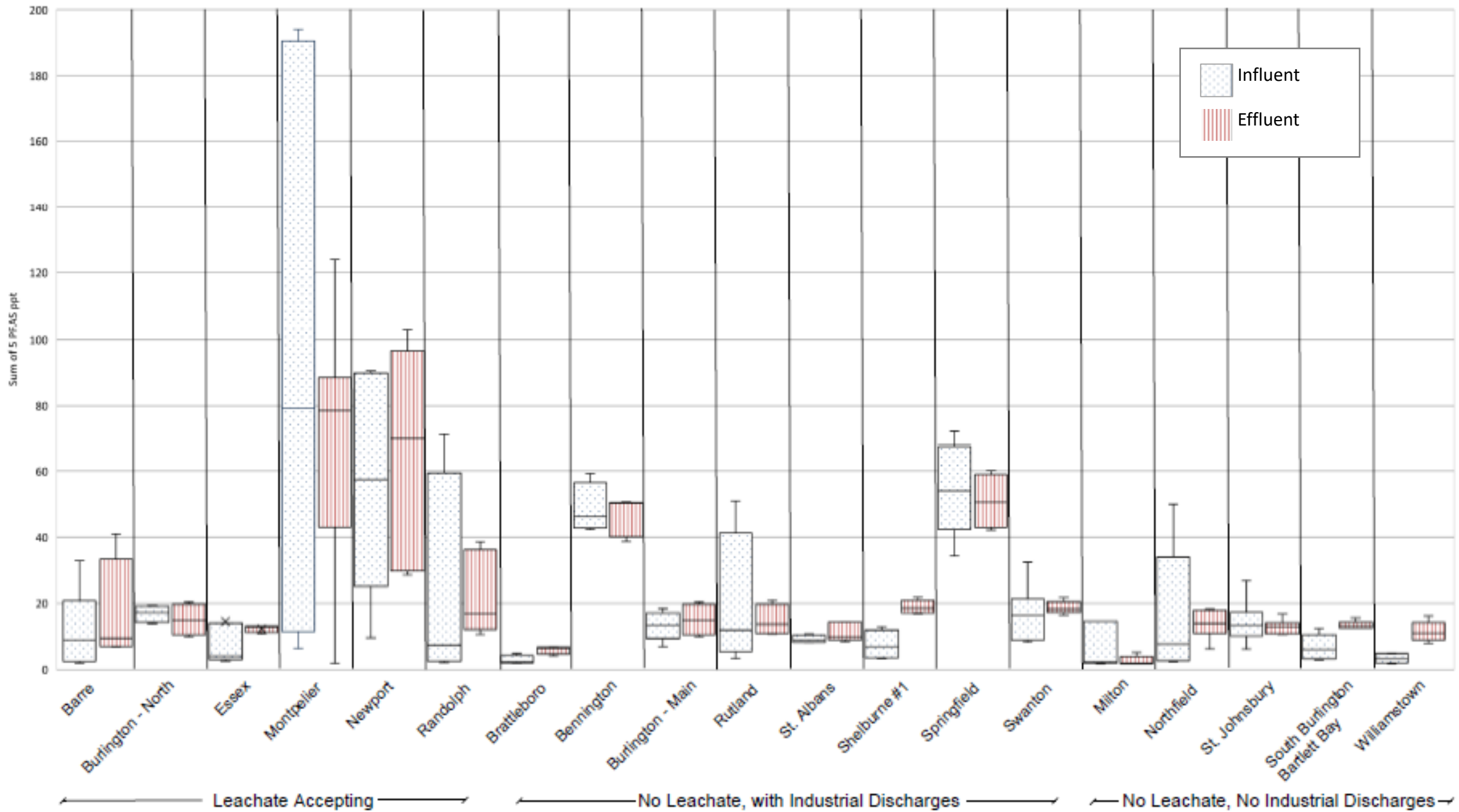


■ Chittenden Solid Waste District
 ■ City of Burlington - Rathe Cell IV
 ■ NEWSVT Landfill
 ■ Randolph

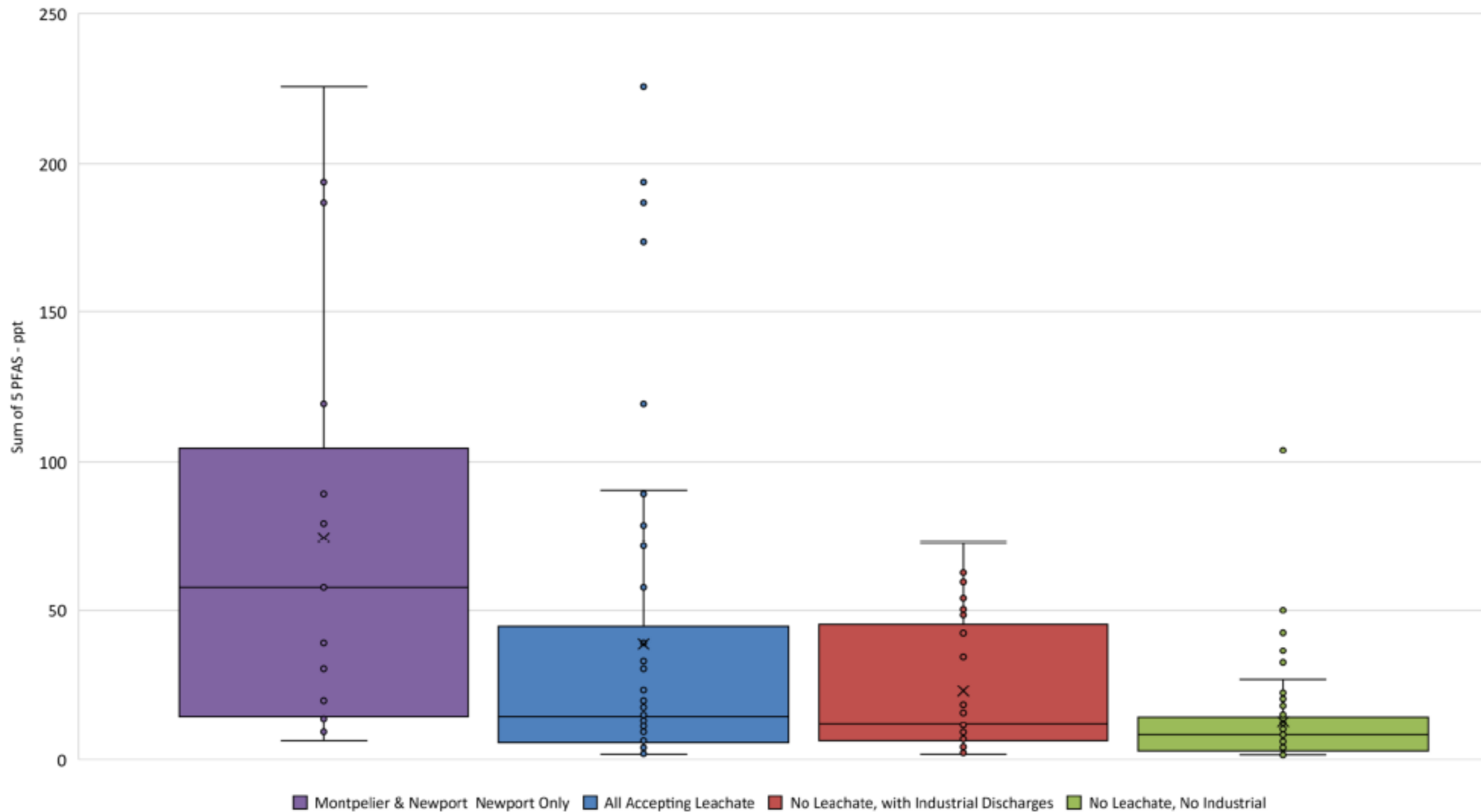
PFAS in Wastewater

Analysis of Influent and Effluent at Wastewater Treatment Facilities (WWTF)

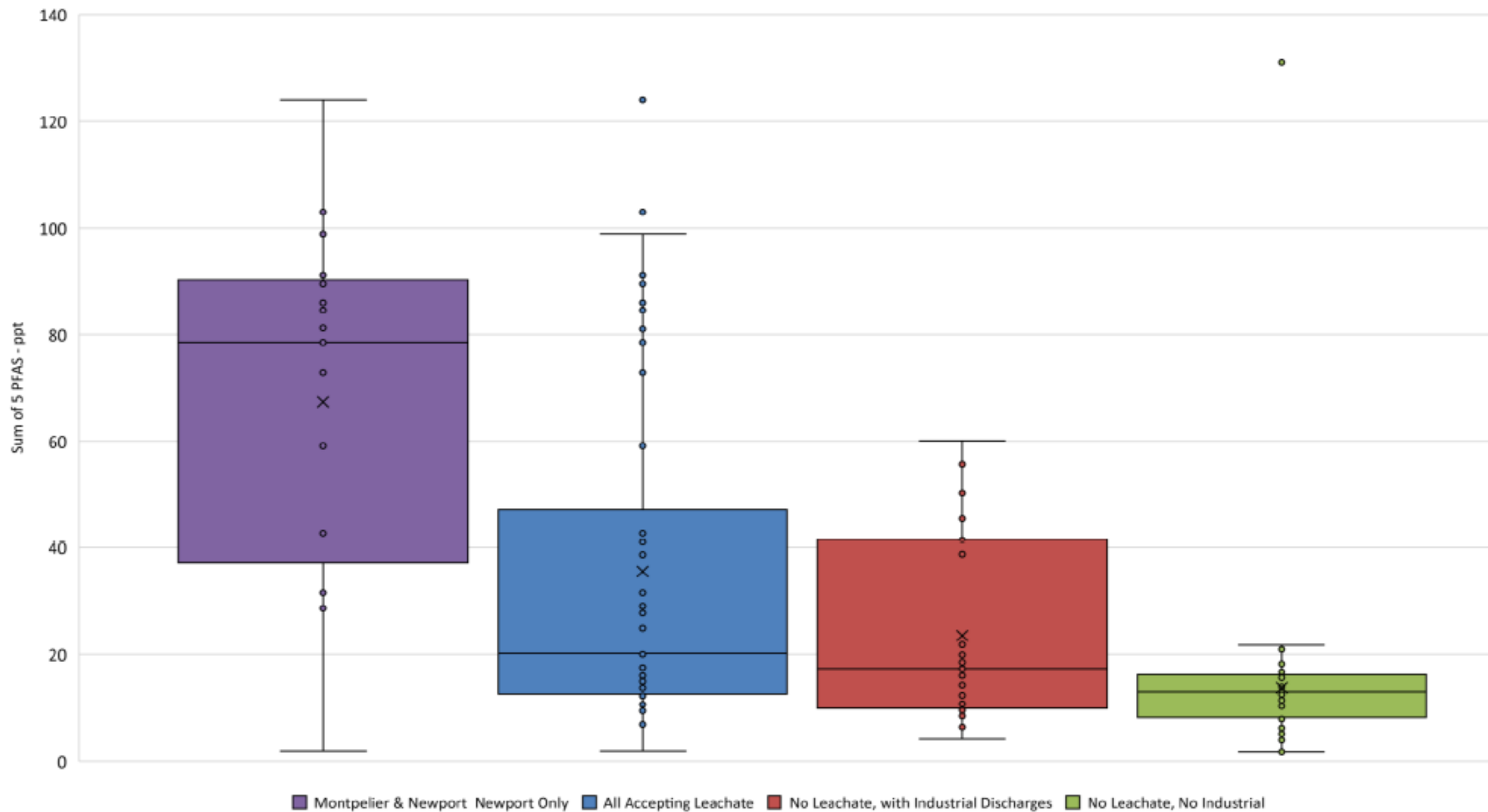
Sum of 5 PFAS for Influent and Effluent All Facilities



Combined WWTF Influent - Sum of 5 PFAS



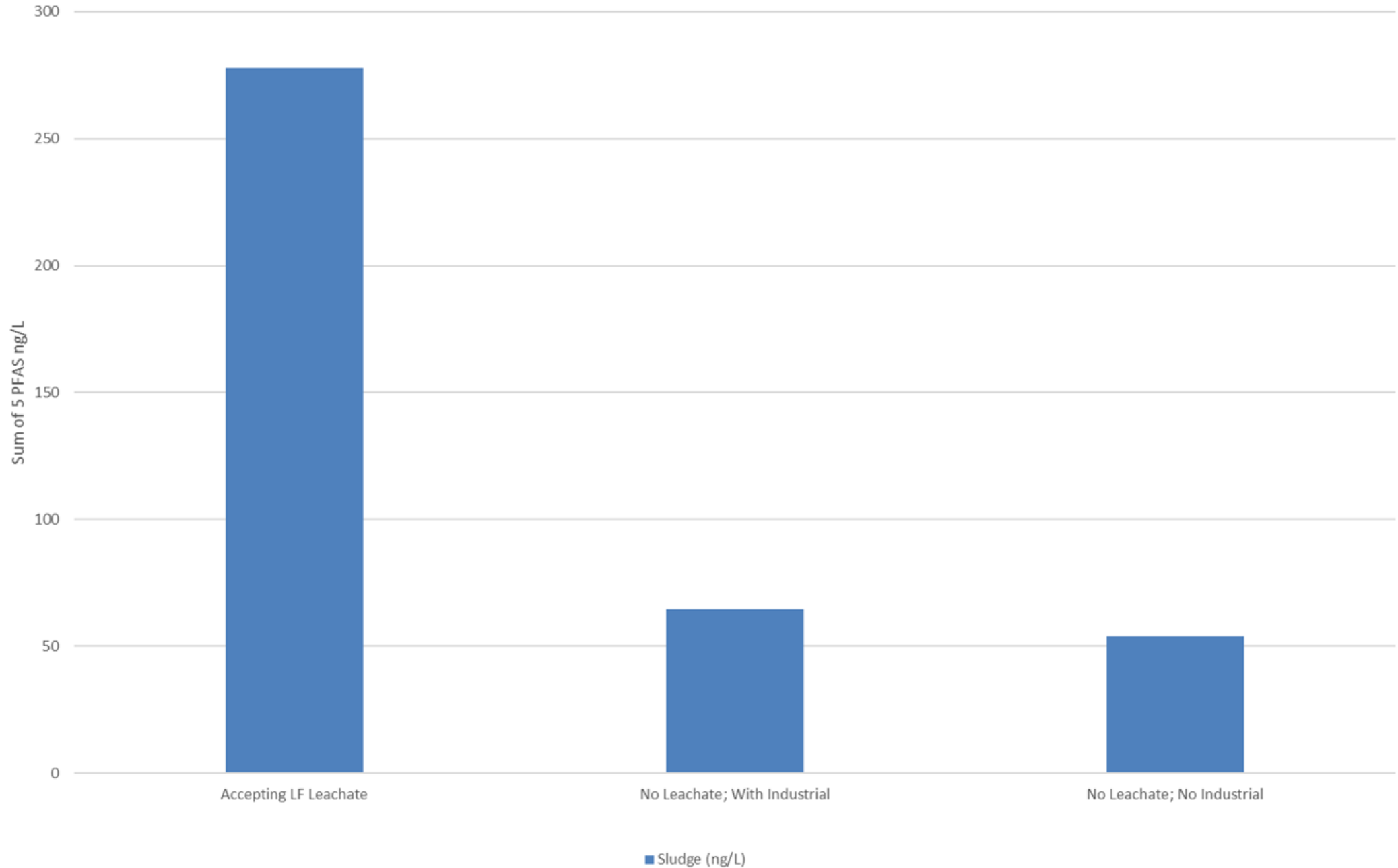
Combined WWTF Effluent - Sum of 5 PFAS

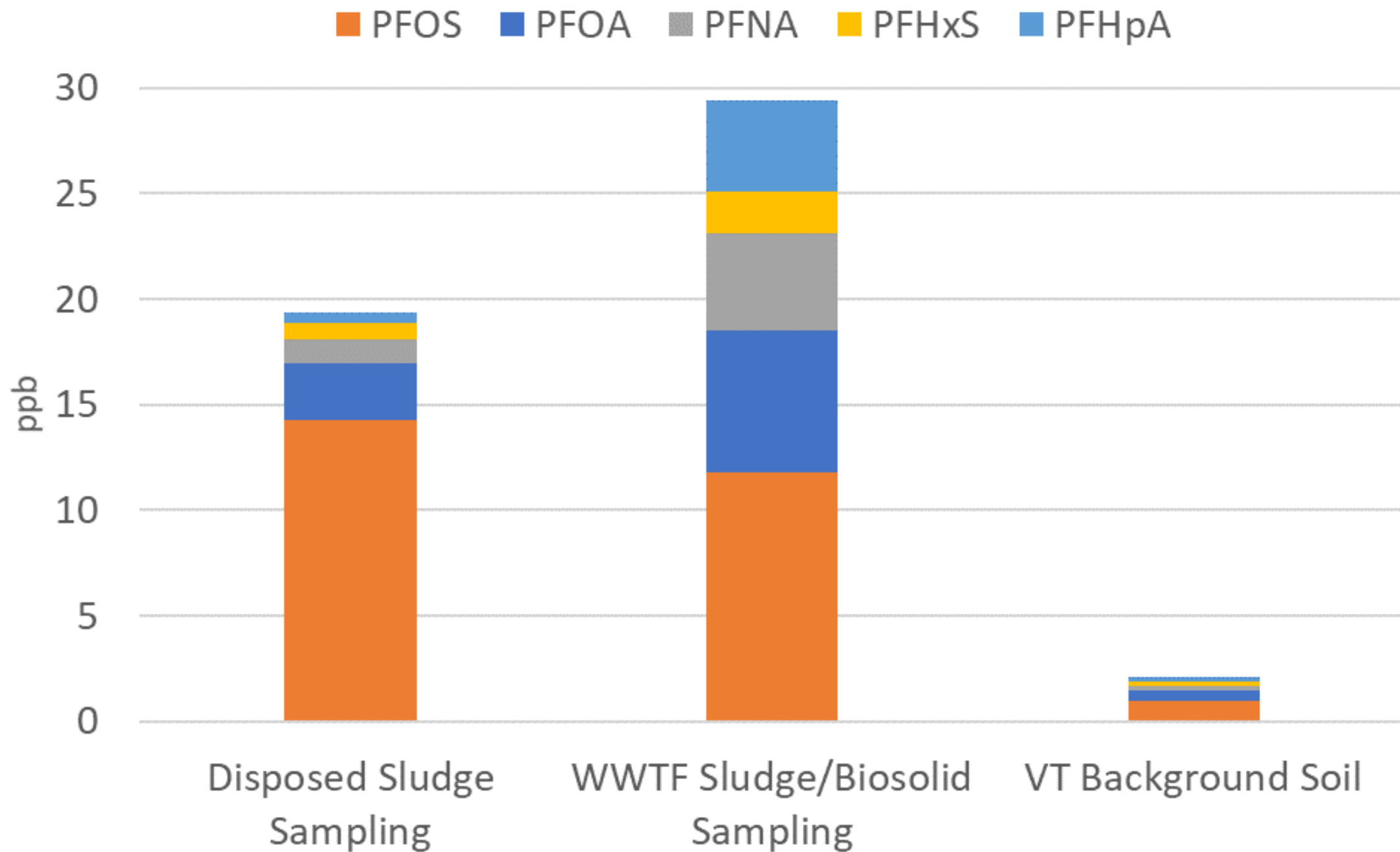


PFAS in Sludges and Biosolids

Sampling at Wastewater Treatment Facilities (WWTF)

Sludge Concentrations WWTF As Liquids - Average Sum of 5 Regulated PFAS





Evaluation of Leachate Treatment Options

Request: Evaluate available leachate treatment options for PFAS and recommend two on-site and two off-site options for the NEWSVT landfill

Challenges and Assumptions:

1. No promulgated treatment or discharge standard
2. Research on PFAS treatment predominantly focused on 'clean' liquids and PFOA or PFOS – leachate is a complex matrix, requiring pre-filtrations
3. All commercially available treatment options for leachate either concentrate or capture PFAS – residuals must be stabilized or destroyed off-site

Industrial or Intensive Uses

Carwashes

- Evaluated 17 of 76 carwashes
- PFAS detected at 4 locations
- Exceedances at 2 locations
- No drinking water impacts

Electroplaters

- Evaluated 16 electroplaters
- PFAS detected at 2 of the 5 locations sampled

Further evaluation and investigation is ongoing