



SOUTH PLATTE
RENEW

PFAS Sampling and Source Investigation
Broomfield and South Platte Renew
Leigha Gad and Drew Caschette

Agenda

PFAS Overview

Plant Descriptions

Permit Sampling

Biosolids

Source Investigation Study

Challenges

Labs/Data

Current and Future of PFAS

What is PFAS?

- Group of chemicals used to make fluoropolymer coatings and products that resist heat, oil, stains, grease, and water.
- PFAS can be in a variety of products; clothing, furniture, adhesives, food packaging, AFFF foam, and non-stick cooking surfaces.
- Over 9,000 PFAS compounds



~~Emerging~~ Contaminant of Concern

- Do not break down in the environment
- Move through soils and contaminate water sources
- Bio accumulate in fish and wildlife
- Potential to cause adverse health effects
 - Liver damage, thyroid disease, obesity, fertility issues and cancer

Broomfield/SPR Plant Descriptions

- Broomfield:
 - 12 MDG Treatment capacity
 - Flow breakdowns
 - 75% residential
 - 20% commercial
 - <1% SIU
- South Platt Renew:
 - 50 MDG Treatment capacity
 - Flow breakdowns:
 - 65% residential
 - 35% commercial
 - <1% SIU



Permit Sampling

- Sample Locations and Collection Methods
- QA/QC Samples
- Laboratory Analysis
 - EPA 537.1 Modified Water Method, Draft 1633 method
- 25 PFAS parameters and a sum equation of 7 parameters---40 PFAS parameters
- Monthly monitoring January 2022-December 2023
- (Broomfield) -Clothing: 100% Cotton shirt, jeans, and steel toe boots



Plant Influent

- SPR influent-two sampling points
- Broomfield influent-one sampling point



Biosolids (Reg 64)

- Location: Effluent Biosolids Sample
- Collection: Direct grab
- Analysis: Draft 1633 method
- Parameters: 40 PFAS parameters
- Duration: Once monitoring every 2 months
January 2023-ongoing with a “trigger limit”



Report: PFAS analytical data must be reported electronically to the division using Excel or CSV type file or other method approved by the division. The division is still working on options for reporting data.

Source Investigation Sampling



BROOMFIELD
Colorado



Sample Locations:	Influent/Effluent 3 SIUs	Influent/Effluent 12 SIUs
	6 Domestic Areas 4 Industrial Areas 2 Airport Areas 3 Car Washes 3 restaurants	2 Domestic Local Limits Manholes 2 Commercial Local Limits Manholes 4 Bonus Manholes! (Heavy vs Light Commercial) 2 Car Washes 1 Fast Food restaurant 3 Auto repair shops 3 Carpet Cleaners
Sample Type:	Grab	Composite, some grabs where specified
Duration:	Sampling events scheduled variously throughout the year.	
Report:	Source Investigation Study to the State due June 30, 2024	

Surveys

- PFAS specific surveys to all permitted industries
 - Broomfield: 12 permitted industries and a few other industries that may contact potential PFAS like locations around the airport
 - SPR: All 20 Permitted Facilities; Notice Letter + Survey
- PFAS added to IU questionnaire's

II: Chemicals or types of compounds that contain or have the potential to contain PFAS

- Aqueous Film Forming Foam (AFFF) firefighting foam**
- Chemguard foam
- Scotchgard
- Tridol
- Dry chemicals used for type B fires
- Ankor Wetting Agent F
- Clepo Chrome Mist Control
- Fumetrol 140 Mist Suppressant
- Benchmark Benchbrite STX

Surveys/Inspections Challenges

- Broomfield and SPR have not found sufficient contributing sources from doing surveys.
 - PFAS is **ubiquitous**; present, appearing, or found everywhere
 - Vendors are unsure/unreliable
 - Not represented in SDS's
 - SDS's do not have to list out PFAS.
 - Percentage amounts Proprietary, Trade Secrets
 - Carpet Cleaning SDS Inventory: <https://coit.sds.center/>

3. Composition/information on Ingredients

3.1. Mixture

The following component(s) in this product are considered hazardous under applicable OSHA(USA)

Chemical name	CAS No.	weight-%
Sucrose	57-50-1	5 - 10
Sodium Octyl Sulfate	142-31-4	3 - 7
2-(2-Butoxyethoxy)ethanol	112-34-5	1 - 5
Polyfluorinated alkyl polyamide	Proprietary	1 - 5
Ethylene Diamine Tetraacetic Acid, Sodium Salt	64-02-8	1 - 5

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

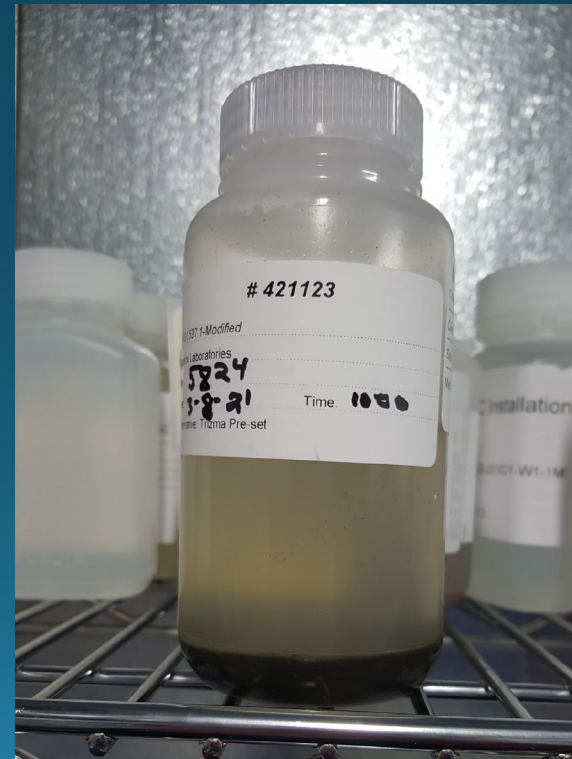
3.2. Mixtures

Name	Product identifier	%
Ammonium Polyphosphate Solution (Non-hazardous)	(CAS-No.) Trade Secret	60 - 80
Performance Additives (Non-hazardous)	(CAS-No.) Trade Secret	5 - 10
Attapulugus Clay	(CAS-No.) 8031-18-3	0.5 - 1.5
Iron oxide	(CAS-No.) 1309-37-1	0.5 - 1.5

*Chemical name, CAS number and/or exact concentration have been withheld as a trade secret

Lab Challenges

- SPR and Broomfield both use Eurofins, similar experience
- Long TAT 2-3 months, has recently decreased
- Dilution and RLs (50 mg/L TSS)
- Prescriptive vs. Performance Based
- Thresholds and Resolution

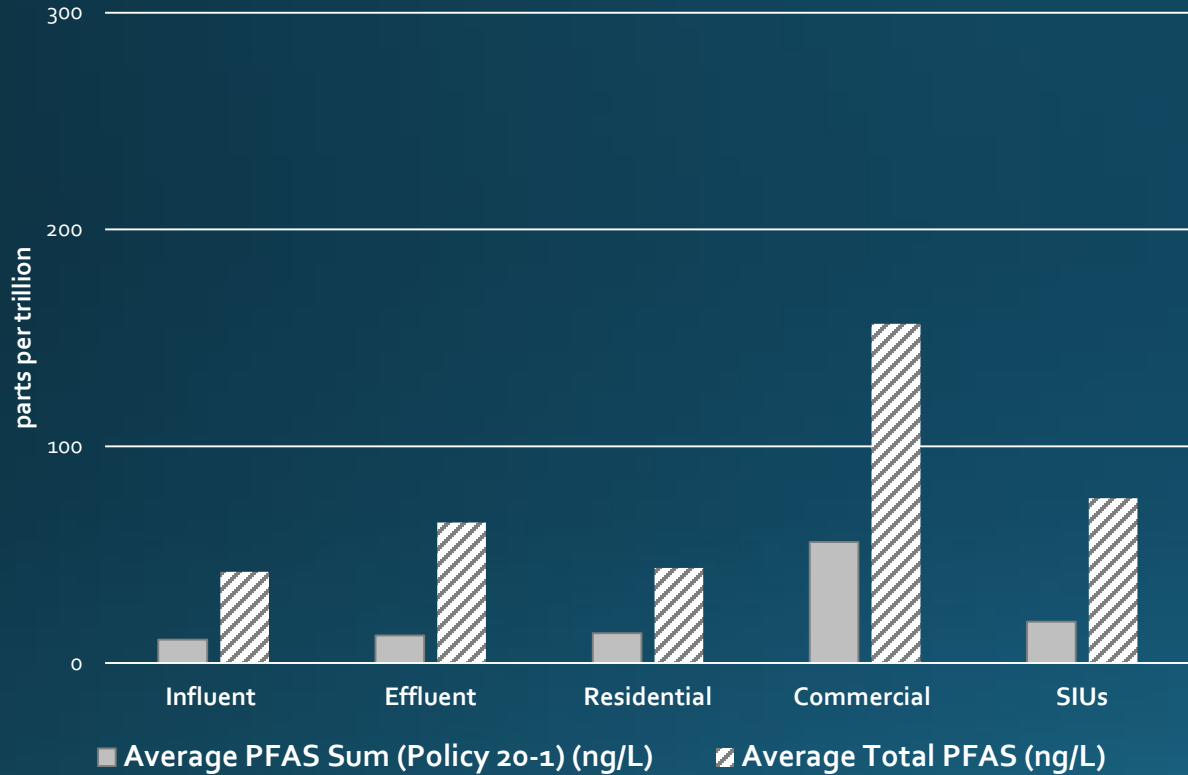


Data

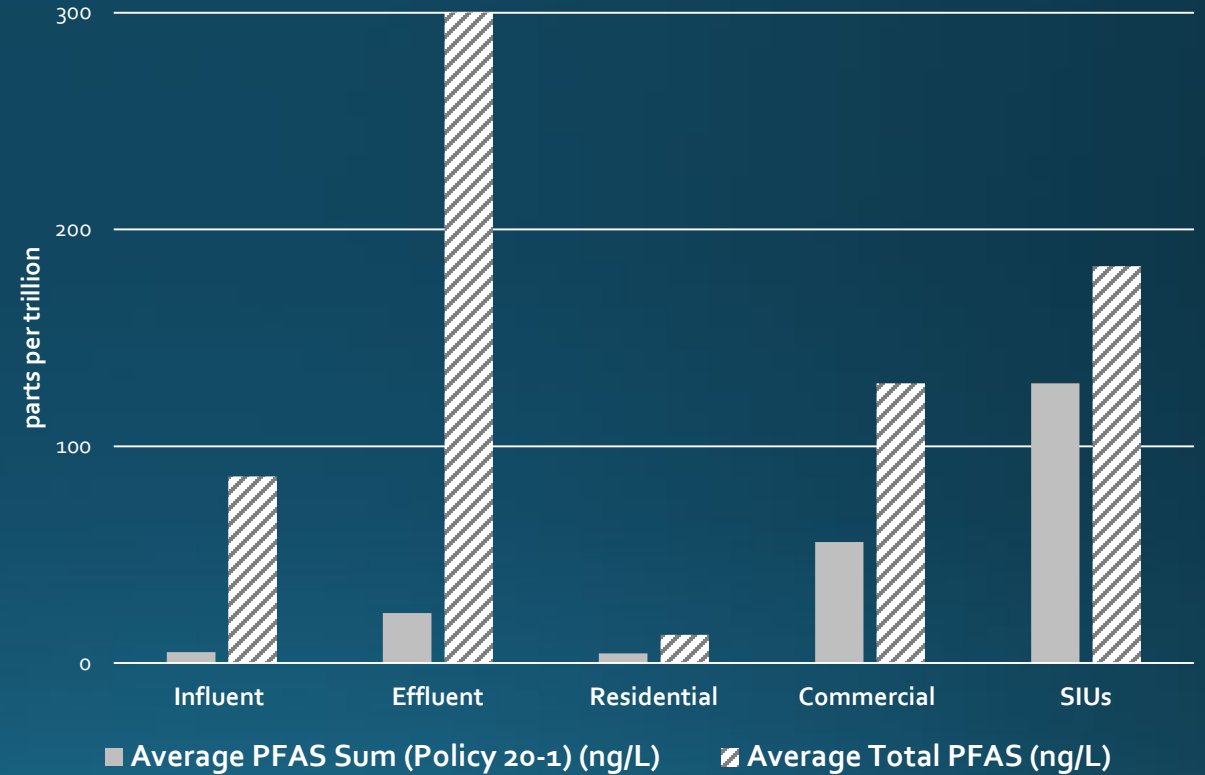
- SPR and Broomfield have PFAS present in wastewater
- Effluent has slightly higher PFAS results than the Influent
- SPR is seeing higher concentrations in residential
- Broomfield is seeing high concentrations in industrial
- Data gaps still in commercial sector
- Car wash results were relatively minimal in comparison to the rest of the data.
- All restaurants between SPR and Broomfield were non-detect
- Carpet Cleaners are extremely high (>20,000 ppt total)

PFAS Concentrations

PFAS Concentrations (South Platte Renew)

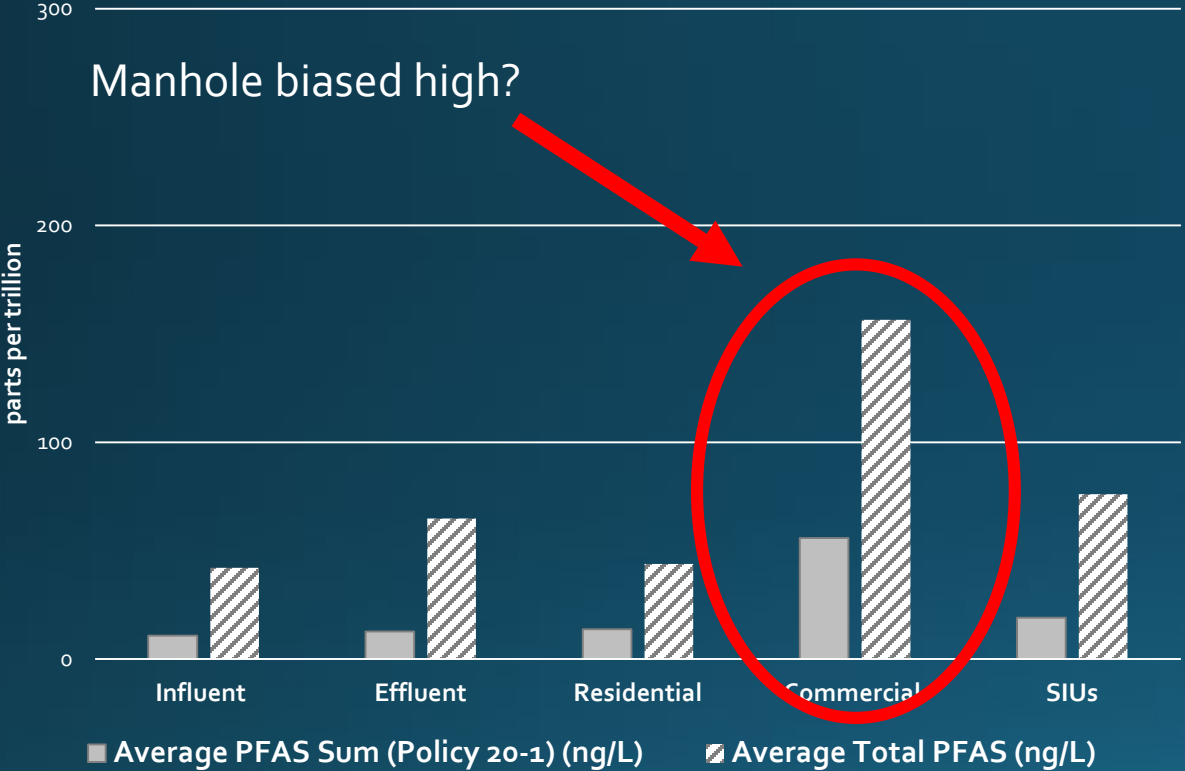


PFAS Concentrations (Broomfield)

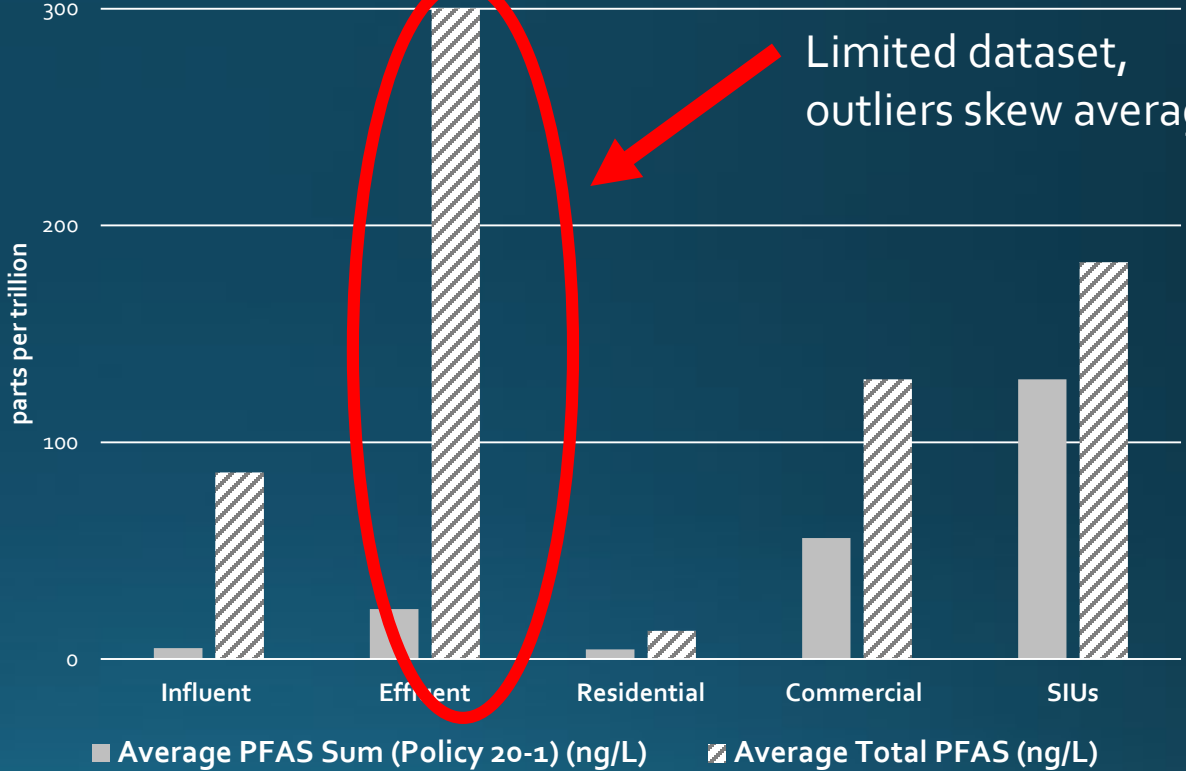


Considerations...

PFAS Concentrations (South Platte Renew)

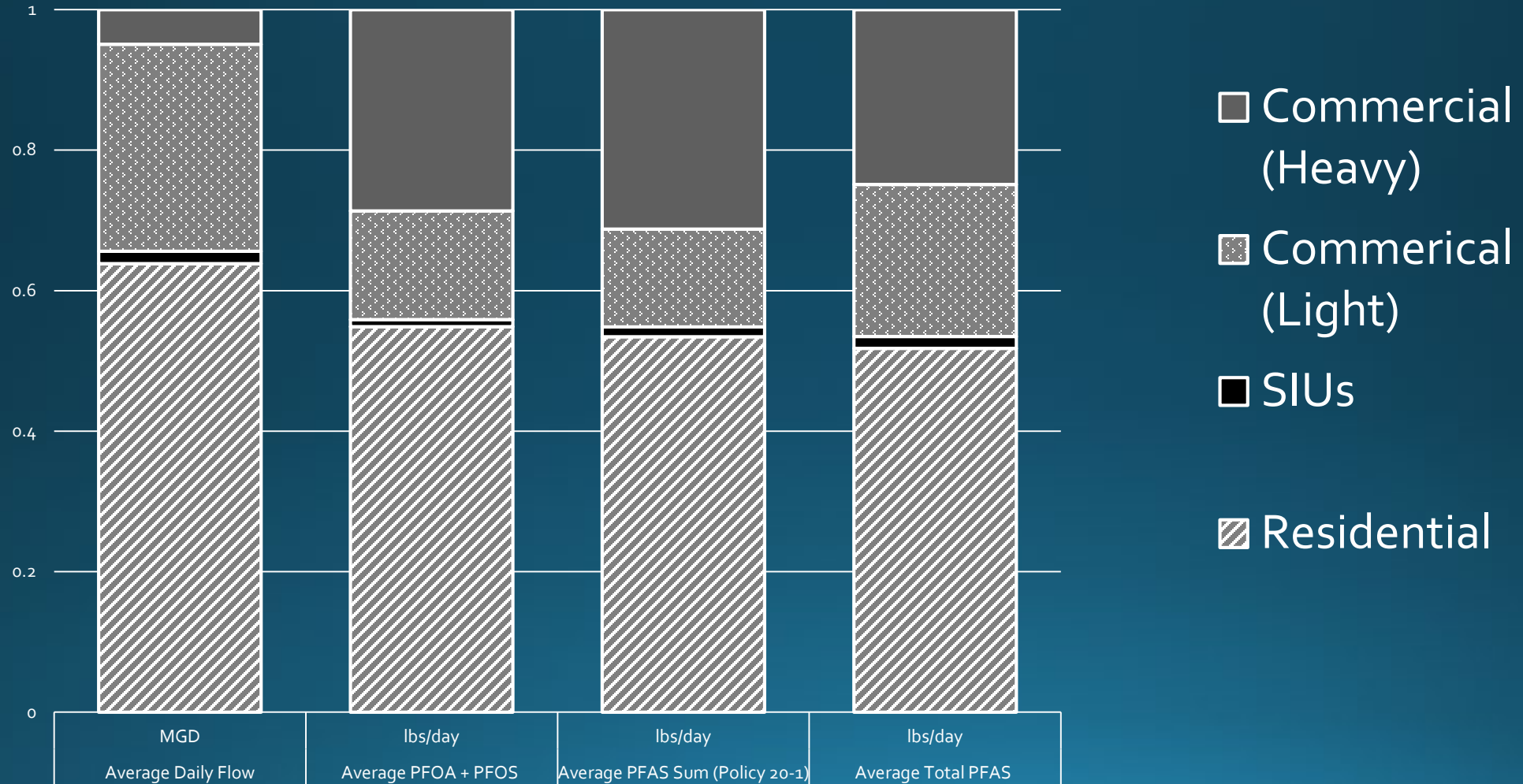


PFAS Concentrations (Broomfield)



Estimated Loadings

Plant Mass Loadings by Source (South Platte Renew)



Current and Future of PFAS

- EPA will designate certain PFAS as Hazardous Substance under CERCLA.
- Drinking Water Limits proposed at 4ppt for PFOA and PFOS and a hazard index for PFNA, PFHxS, PFBS, and Gen-X
- Potential regulatory requirements:
 - Stormwater
 - Groundwater
 - Wastewater permits for landfills have limits
 - Biosolids (CO wastewater permits in 2023)



Challenges and Uncertainty Exist

- General Recommendation Guidance available
- Early stages of Source Identification
 - Chemicals still unknown, thousands of formulators
 - How to implement BMPs?
- Pass on costs on POTWs an/or IUS
- What is considered PFAS free?
- Develop Local Limits?
 - No Federal/State limits
 - Draft Method

Progress!

- Phase I characterization to be complete or 5+ Colorado POTWs in 2024!
- Lab capabilities are catching up to the demand
- Policy changes are occurring to regulate top down (yes, this is slow)
- Draft 1633 method for is finalized for aqueous portion
- Extensive Research in Treatment Technologies



Questions?

Contacts:

Leigha Gad

Regulatory Compliance Coordinator

City and County of Broomfield

Email: lgad@broomfield.org

Office: 303.464.5686

Cell: 303.901.3353

Drew Caschette

Industrial Pretreatment Specialist II

South Platte Renew

Email: rcaschette@englewoodco.gov

Office 303.762.2378

Cell: 303.994.9952

