NHDES RESIDUALS MANAGEMENT SECTION

Anthony F. Drouin

Administrator- Residuals Management Section

Water Division – Wastewater Engineering Bureau (NHDES)

2022 Air and Water Regulatory Conference: BIA

Wednesday September 21, 2022

What will you learn today?

- Who is the Residuals Management Section?
- What is a Sludge Quality Certificate?
- What is Beneficial Use?
- 2017 – present SQC PFAS Investigation
- Education Outreach
- What's Next?

RESIDUALS MANAGEMENT SECTION

NHDES

- Water Division
  - Wastewater Engineering Bureau
    - Residuals Management Section

Anthony Drouin **Supervisor** *Sludge Quality Certification Permitting*	Judith Sears-Houston **Permitting & Enforcement Engineer** *Site and Facility Permitting*	Wade Pelham **Sludge & Septage Coordinator** *Training and Outreach*	Jim Talvy **Inspector** *Sludge & Septage Hauler Permitting*

APPLICABLE STATE RULES FOR RESIDUALS MANAGEMENT OPTIONS

- Land Application - Env-Wq 800/Env-Wq 1600/RSA 485-A
- Solid Waste - Env-Sw 100 through 2100, RSA 149-M
- Incineration - Env-A 600, 40 CFR Part 60, Subpart O
- Federal Regulations - 40 CFR Part 503

Sludge Quality Certification

- Basic information
- Industrial pretreatment information
- Quantity
- Pathogen & vector attraction reduction options
  - Class A & Class B biosolids
    - Process to Significantly Reduce Pathogens: Class B
    - Process to Further Reduce Pathogens: Class A
  - Short Paper Fiber
  - Drinking Water Residuals
- Historical & current quality data

Beneficial Use of Biosolids

Beneficial Use is the utilization of the nutrients and organic matter from the biosolids for the agronomic need as long as it *does not pose a significant threat to human health or environment*. Beneficial use applies to agricultural, forest, and land reclamation management practices

- Bulk biosolids must obtain an SQC to be distributed in NH
- Annual soil test determine crops nutrient demand supplied from biosolids (UNH BMP)
- Class B land application must obtain a site permit through RMS
- Concentration limits and screening standards set for VOC, SVOC, PCB's, Dioxin, & Metals – 168 analytes

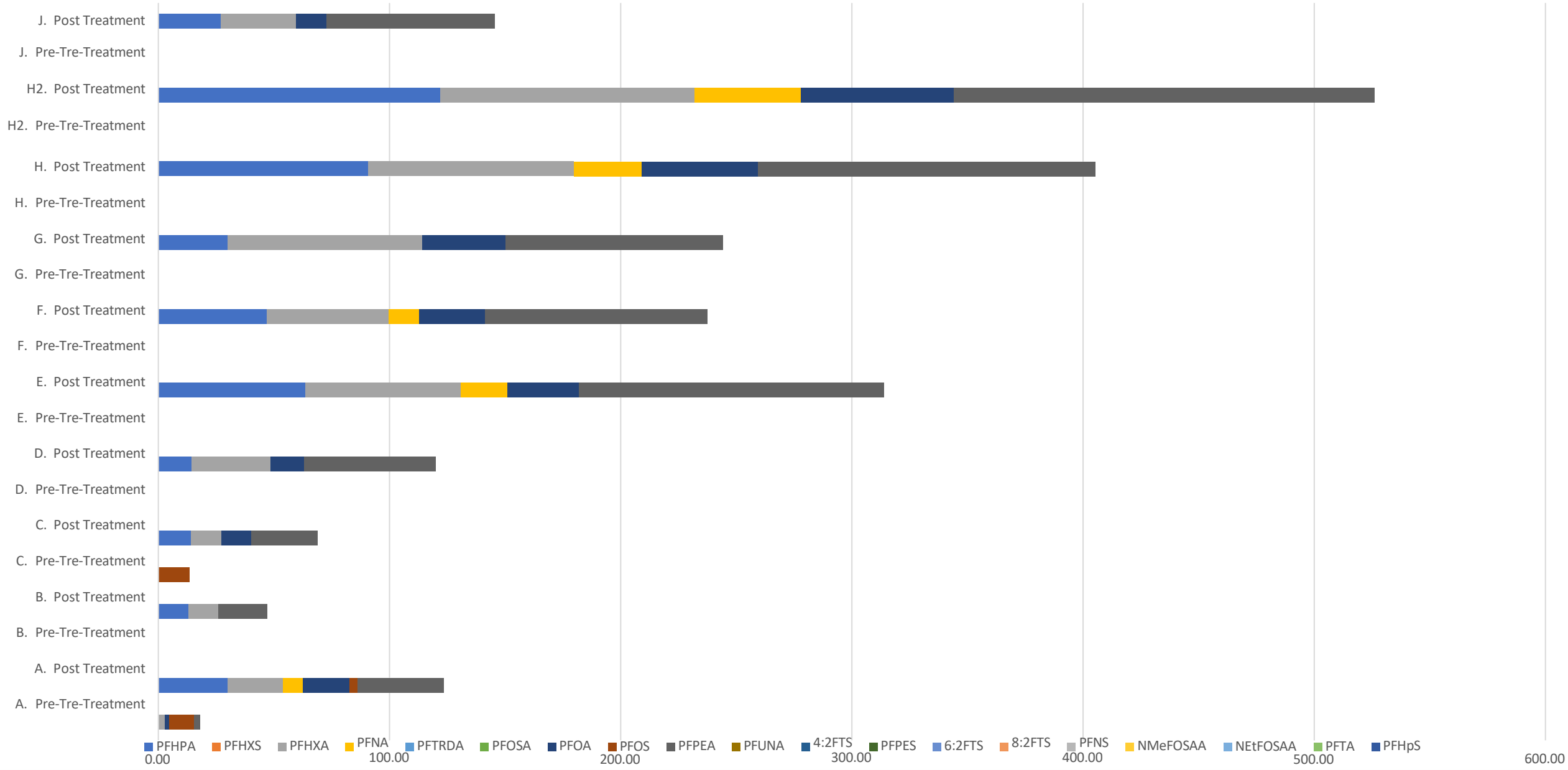
2018 NH Sludge, Septage, and Leachate

- NH Biosolids Recycled to Land Application : ~40,000 wet tons
- NH Sludge that was disposed at a landfill : ~50,000 wet tons
- NH Sludge that was incinerated : ~17,500 wet tons

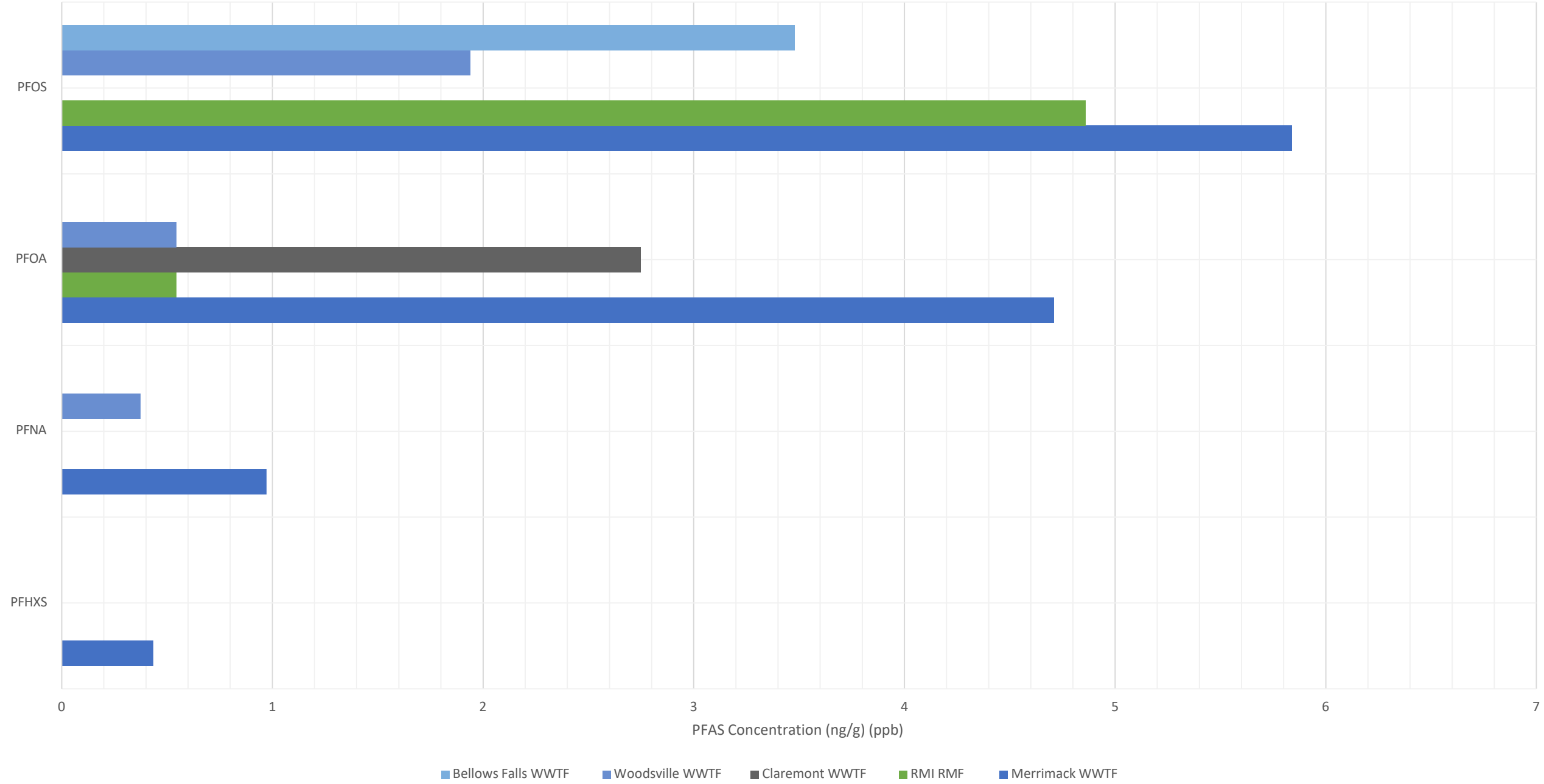
  *Sludge managed to lagoon not accounted for
  **NH WWTF, no paper mill sludge accounted for

- Over 100,000,000 gallons of septage was managed in NH
- 6 Operating lined landfills in NH : ~100,000,000 gallons of leachate
  ~80,000,000 gallons managed at WWTFs within state
  ~20,000,000 gallons managed at WWTFs out of state

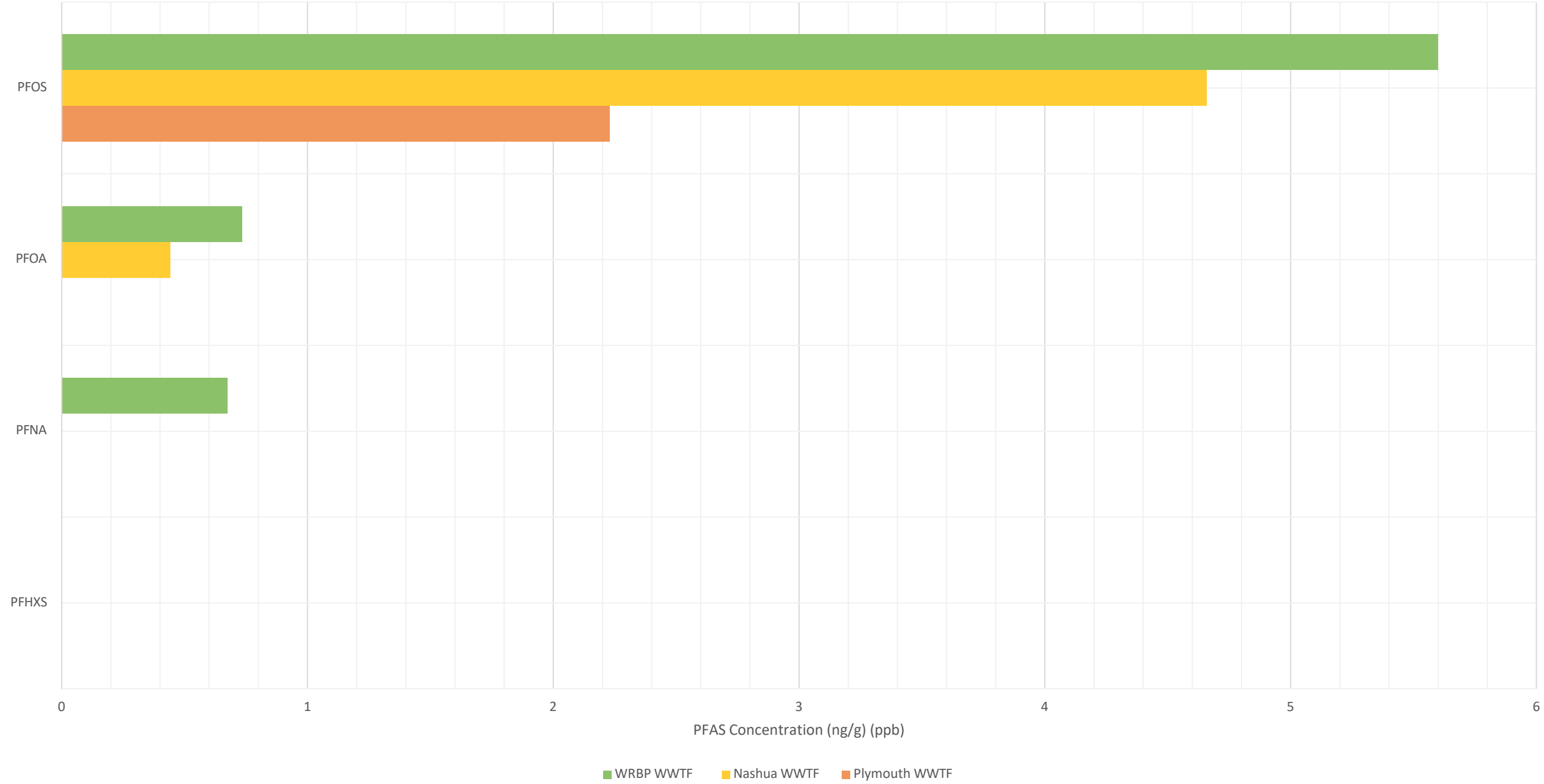
Sunapee, NH Collection System PFAS Total Oxidizable Precursor Assay (ng/l)



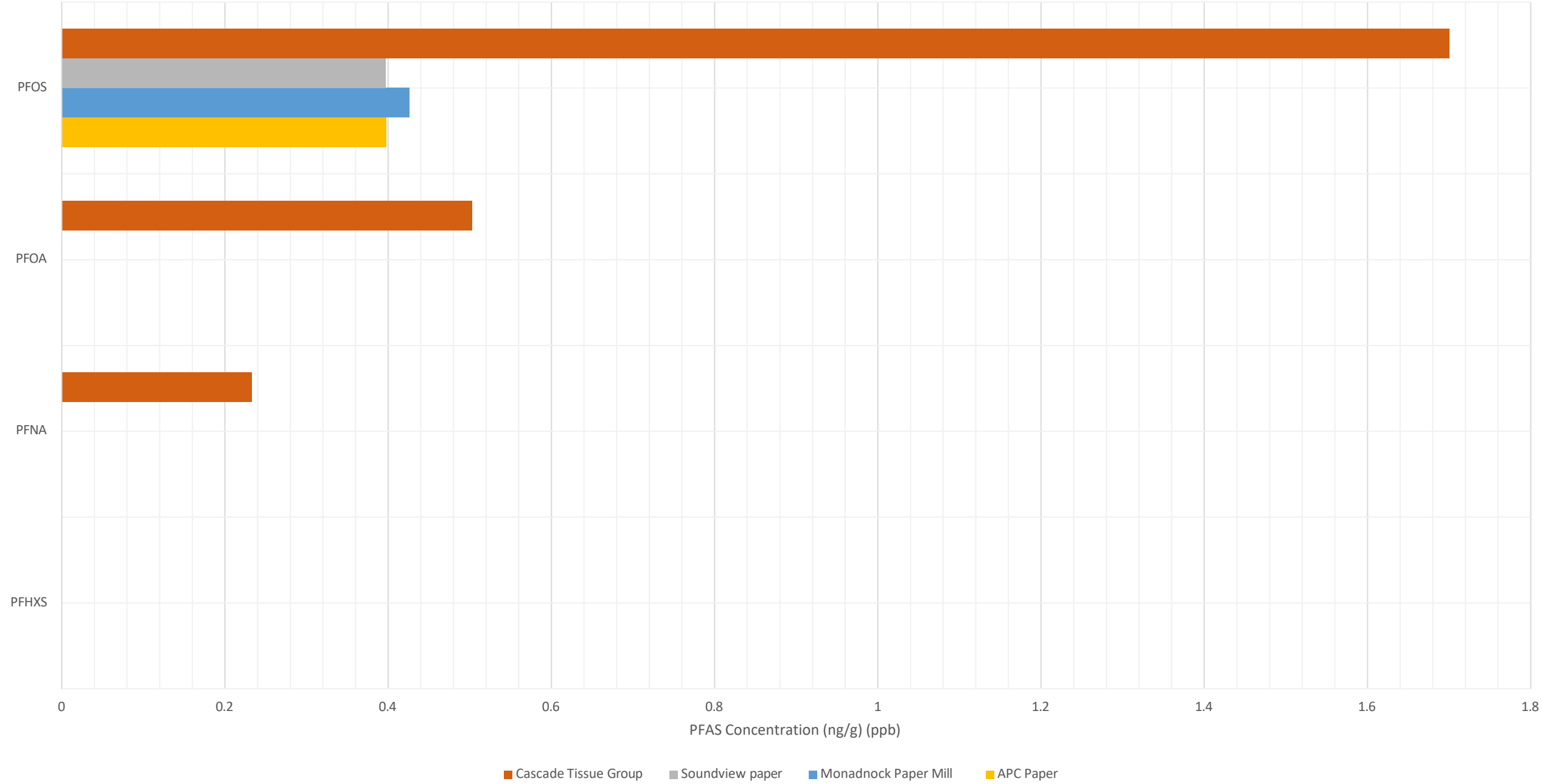
2022 NHDES RMS SQC Class A Biosolids PFAS Investigation Data



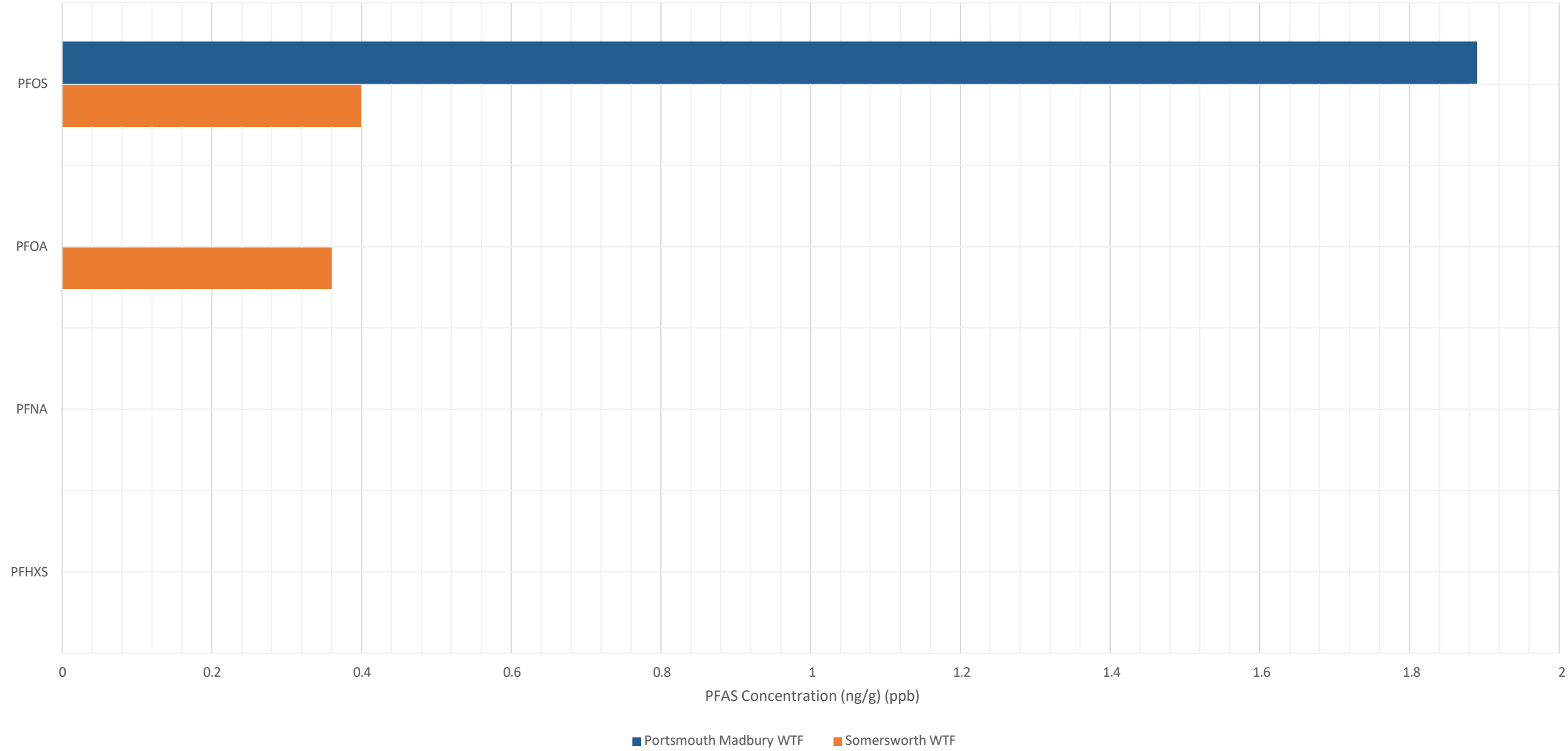
2022 NHDES RMS SQC Class B Biosolids PFAS Investigation Data



2022 NHDES RMS SQC Short Paper Fiber PFAS Investigation Data



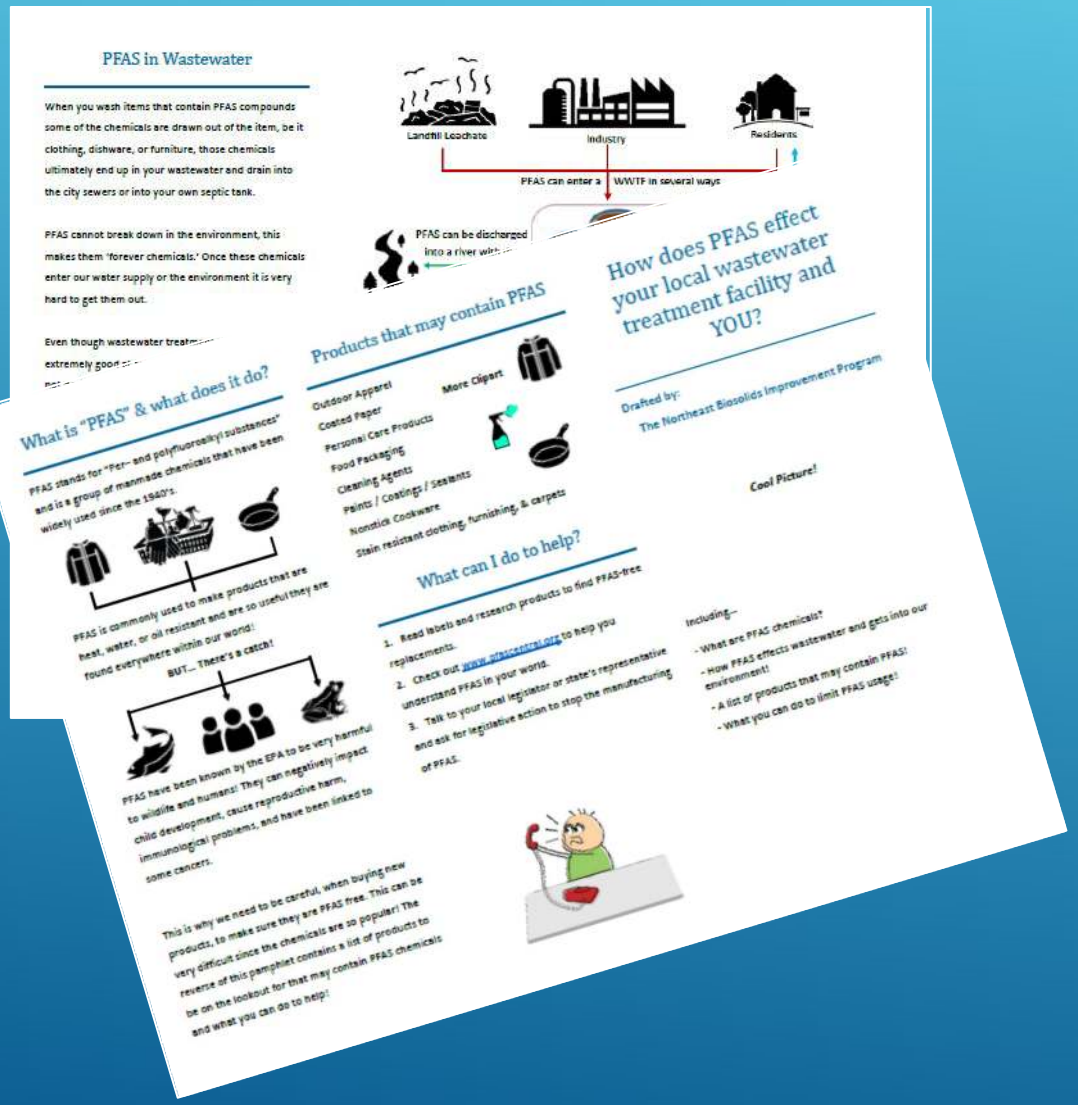
2022 NHDES RMS SQC Drinking Water Treatment Residuals PFAS Investigation Data



USGS SOIL / SLUDGE LEACHING STUDY

- Three phase study
  - NH soil background sampling (100 samples)
  - Batch Experiments on 5 major biosolids and PFAS contaminated NH soils
  - Field Investigation to prove accurate coefficients were developed
- Phase 1 : Complete – PFOS & PFOA detected in all samples
- Phase 2: 95% Complete
- Phase 3: Complete
- Full Completion: Winter 2022 / 2023
- NH Soil Standards Development: HB1547 - November 2023

EDUCATION OUTREACH



PFAS in Wastewater

When you wash items that contain PFAS compounds some of the chemicals are drawn out of the item, be it clothing, dishware, or furniture, those chemicals ultimately end up in your wastewater and drain into the city sewers or into your own septic tank.

PFAS cannot break down in the environment, this makes them 'forever chemicals.' Once these chemicals enter our water supply or the environment it is very hard to get them out.

Even though wastewater treat… extremely good a…

Landfill Leachate · Industry · Residents

PFAS can enter a WWTF in several ways

PFAS can be discharged into a river wit…

What is "PFAS" & what does it do?

PFAS stands for "Per- and polyfluoroalkyl substances" and is a group of manmade chemicals that have been widely used since the 1940's.

PFAS is commonly used to make products that are heat, water, or oil resistant and are so useful they are found everywhere within our world!

BUT… There's a catch!

PFAS have been known by the EPA to be very harmful to wildlife and humans! They can negatively impact child development, cause reproductive harm, immunological problems, and have been linked to some cancers.

This is why we need to be careful, when buying new products, to make sure they are PFAS free. This can be very difficult since the chemicals are so popular! The reverse of this pamphlet contains a list of products to be on the lookout for that may contain PFAS chemicals and what you can do to help!

Products that may contain PFAS

- Outdoor Apparel
- Coated Paper
- Personal Care Products
- Food Packaging
- Cleaning Agents
- Paints / Coatings / Sealants
- Nonstick Cookware
- Stain resistant clothing, furnishing, & carpets

More Clipart

How does PFAS effect your local wastewater treatment facility and YOU?

Drafted by:
The Northeast Biosolids Improvement Program

Cool Picture!

What can I do to help?

1. Read labels and research products to find PFAS-free replacements.
2. Check out www.ptaccentral.org to help you understand PFAS in your world.
3. Talk to your local legislator or state's representative and ask for legislative action to stop the manufacturing of PFAS.

Including–
- What are PFAS chemicals?
- How PFAS effects wastewater and gets into our environment!
- A list of products that may contain PFAS!
- What you can do to limit PFAS usage!

What are Emerging Contaminants?

The EPA defines emerging contaminants to include: PFAS, Pharmaceuticals, Pesticides, Perso… re products, Industrial solvents and chemicals, Explo… and Gasoline additives.

"Contaminants of emer… pharmaceuticals and … increasingly being d… and there is conc… impact on aqua… to evaluate t… aquatic life levels for …

What is Domestic Septage?

Domestic septage is the liquid or solid material removed from a septic tank, cesspool, portable toilet, type III marine sanitation device, or a similar system that receives only household, non-commercial, or non-industrial wastes.

Household activities include the normal bathroom and kitchen activities done at home by the residents living in that household such as toilet use, residential dish and clothes washing, and showering.

What is Non-Domestic Septage?

Non-Domestic Septage is also known as commercial or industrial septage. It includes any waste generated by non-household activities that is discharged as wastewater into a septic tank, cesspool, portable toilet, or type III marine sanitation device.

Some examples of Non-Domestic septage:
- A hair salon operating out of someone's home
- An auto mechanic's shop attached to the owner's home
- A school that uses industrial grade cleaning chemicals

"The factor that differentiates commercial and industrial septage from domestic septage is not the type of establishment generating waste, rather it is the type of waste being produced" (EPA).

Turning Sludge into Biosolids

Wastewater treatment facilities generate sludge from the operations at their plant. On the surface this sludge may seem useless, but the sludge can be recycled into a fertilizer known as biosolids. Biosolids are very useful and can be used …alize agricultural lands and public parks and gardens.

Document Objective

Dealing with emerging contaminants is a challenge for wastewater disposal facilities, especially if they are producing solids or biosolids for beneficial use. Because of this, some wastewater treatment facilities are beginning to screen for PFAS and other emerging contaminants. These facilities know that this screening is necessary to ensure they provide a quality fertilizer or soil conditioner to their customers, and to maintain public acceptance of their materials.

This document is to help septage haulers and wastewater operators distinguish the difference between domestic and non-domestic septage, and to help familiarize those haulers and operators with the screening programs that may be in place to monitor for emerging contaminants.

Useful Links

NEBRA Sampling Guidance:
https://www.nebiosolids.org/uploads/nebiosolids/documents/Sampling_Guidance_Manual_Final_Version_1.pdf

Northeast WWTF Septage Permit Application:
https://www.mass.gov/doc/septage-permit-application-0/download

NEBIOS Checklist:
Link

Why Conduct Septage Screenings?

In order to comply with incoming PFAS regulations, some wastewater facilities may set up testing programs to screen domestic and non-domestic septage coming into the plant …PFAS or the other emerging contaminants.

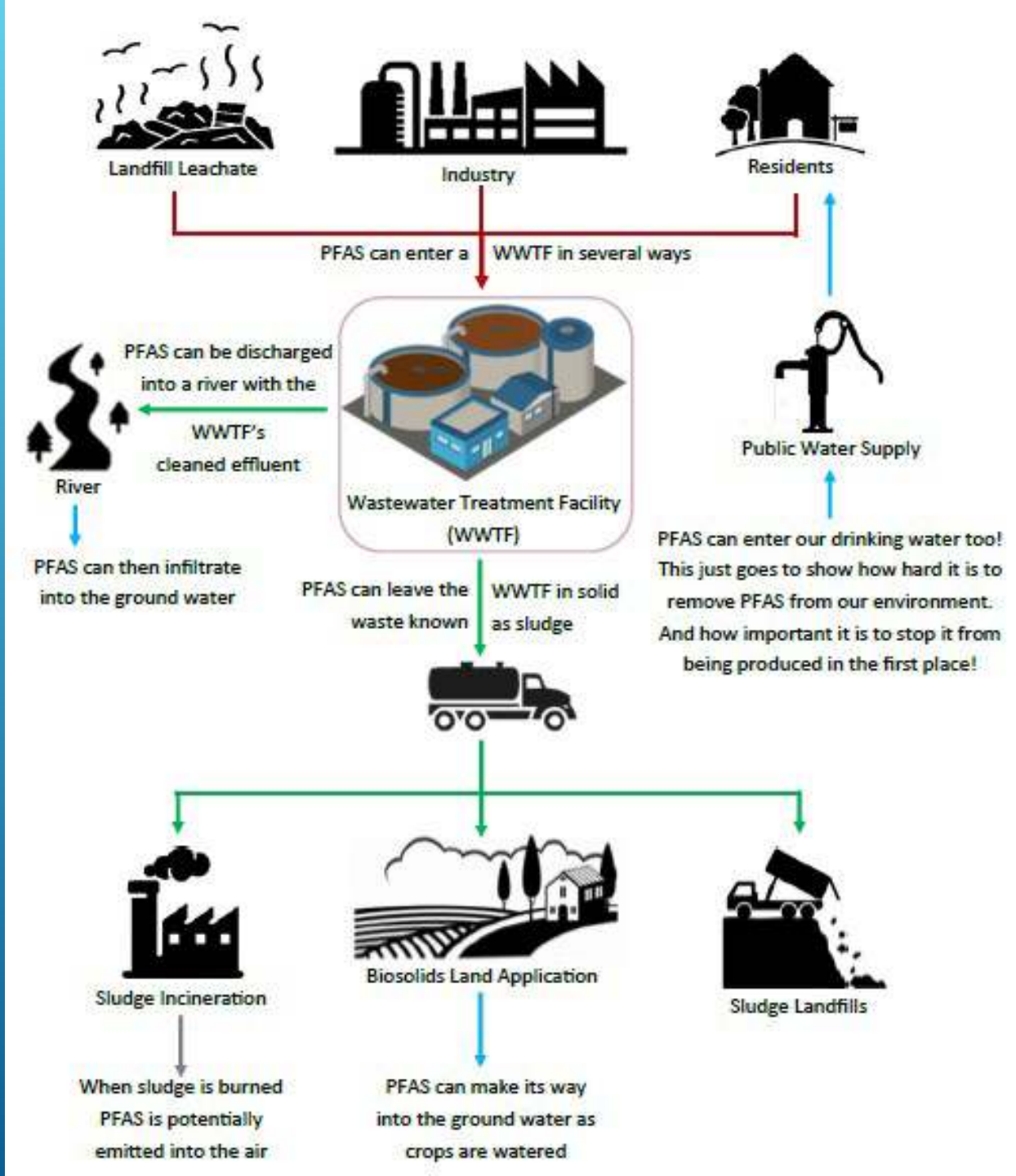
…the septage hauler to be in …receiving facility to check if a …

Wastewater Operator and Septage Hauler PFAS Guidance

Drafted by:
The Northeast Biosolids Improvement Program

Including–
- The importance of keeping PFAS out of our biosolids!
- A list of Emerging Contaminants and their effects!
- What WWTF operators and septage haulers can do against these contaminants!

Before


Landfill Leachate
Industry
Residents
PFAS can enter a WWTF in several ways
PFAS can be discharged into a river with the WWTF's cleaned effluent
River
PFAS can then infiltrate into the ground water
Wastewater Treatment Facility (WWTF)
Public Water Supply
PFAS can enter our drinking water too! This just goes to show how hard it is to remove PFAS from our environment. And how important it is to stop it from being produced in the first place!
PFAS can leave the waste known WWTF in solid as sludge
Sludge Incineration
When sludge is burned PFAS is potentially emitted into the air
Biosolids Land Application
PFAS can make its way into the ground water as crops are watered
Sludge Landfills

WHAT'S NEXT?

https://www.renewableenergymagazine.com/biomass/aries-clean-energy-receives-permits-for-worlda-20190716

https://rmirecycles.com/shincci-usa/

https://www.bioforcetech.com/

https://modernpumpingtoday.com/clean-energy-from-landfill-diversion-plus-the-bonus-of-biochar/

Anthony F. Drouin

Residuals Management Section Supervisor

Water Division - Wastewater Engineering Bureau, NHDES

29 Hazen Drive, PO Box 95, Concord, NH 03302

Tel: (603) 271-3571 | Fax: (603) 271-4128

anthony.f.drouin@des.nh.gov

THANK YOU! ANY QUESTIONS?