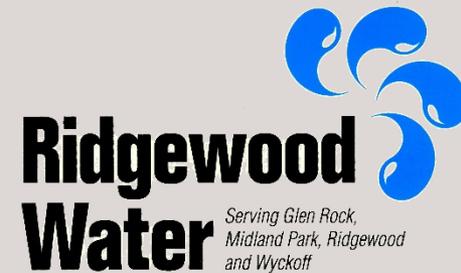




**Host: Mayor Ramon Hache,  
Village of Ridgewood**

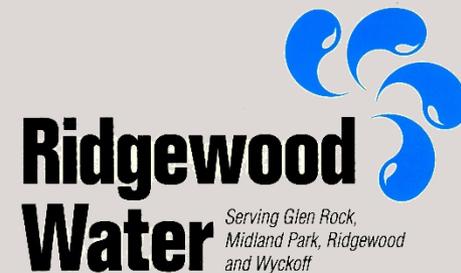


**Speaker: Richard Calbi Jr.  
Director of Operations,  
Ridgewood Water**



# Maintaining Compliance With Evolving Drinking Water Guidance and Regulations:

## Per - and Polyfluoroalkyl Substances (PFAS)





# Background

## **US EPA Unregulated Contaminant Rule (UCMR)**

US EPA uses UCMR to collect data for contaminants that are suspected to be present in drinking water and do not have health-based standards set under the Safe Drinking Water Act.

- In 2014 and 2015: As part of the UCMR3, RW collected and provided to US EPA and NJ DEP data from all active treatment plants to determine the occurrence of unregulated contaminants, referred to as Contaminants of Emerging Concern.
- Sampling included 6 Unregulated Contaminants (PFAS).



# US EPA Unregulated Contaminant Rule

Ridgewood Water collected samples in 2014 and 2015 as part of an ongoing study to determine the general occurrence of unregulated contaminants. Currently, there are no drinking water regulations for these compounds. Unregulated contaminant monitoring helps the US EPA and the NJ DEP to determine where certain contaminants occur and whether they should consider regulating those contaminants in the future.

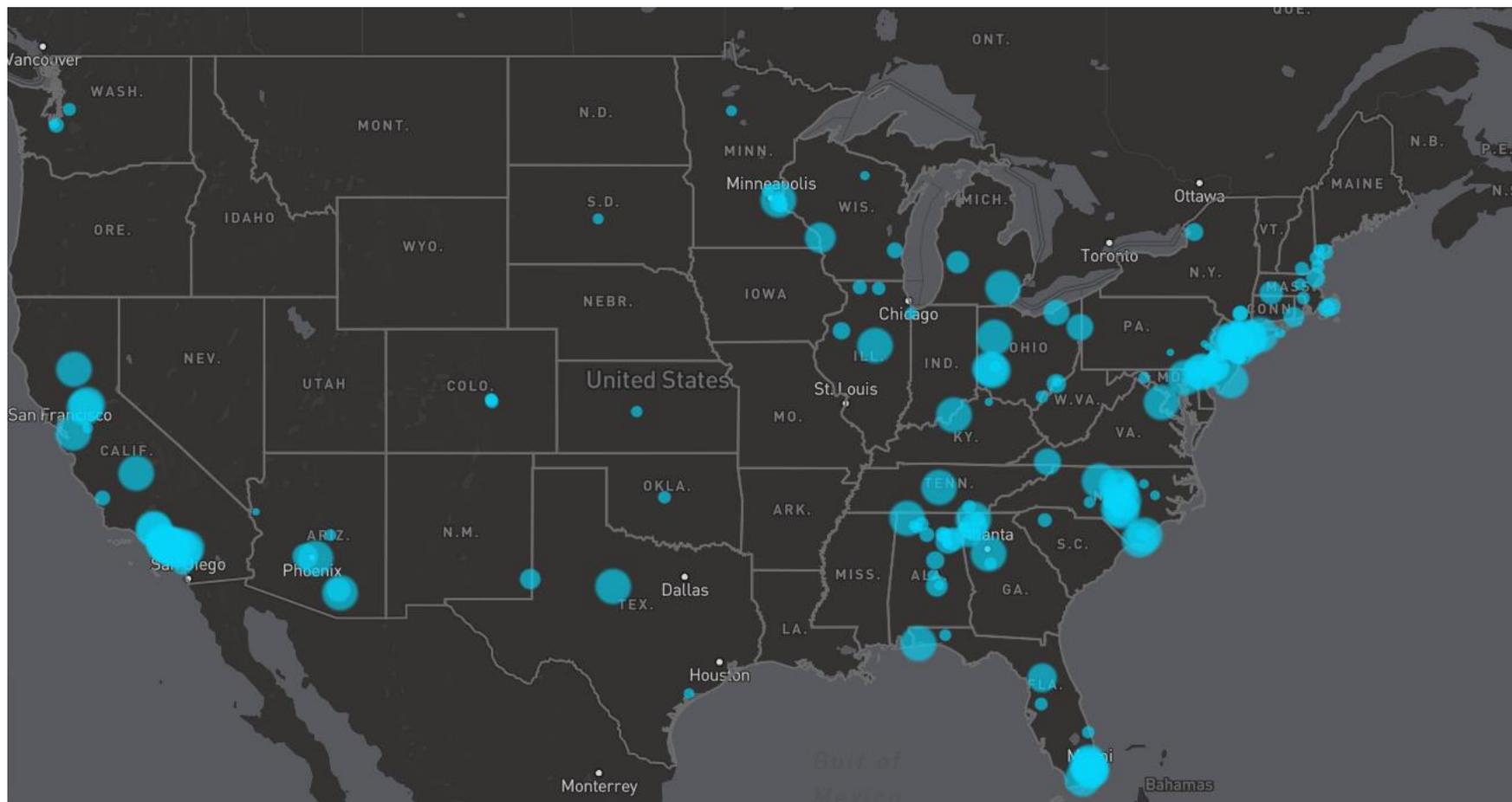
Contaminant	Level Detected	Units of Measurement	Likely source
1,1-Dichloroethane	Range = ND – 30	ppb	Halogenated alkane; used as a solvent
1,4-Dioxane	Range = ND – 0.2	ppb	Cyclic aliphatic ether; used as a solvent or solvent stabilizer in manufacturing and processing of paper, cotton, textile products, automotive coolant, cosmetics and shampoos
Chlorate	Range = 35 – 210	ppb	Agricultural defoliant or desiccant; disinfection byproduct; used in the production of chloride
Hexavalent Chromium	Range = ND – 2.9	ppb	Naturally-occurring element; used in the making of steel and other alloys; chromium -3 or -6 are used for chrome plating, dyes and pigments, leather tanning, and other wood preservation
Chromium	Range = ND – 0.96	ppb	Naturally-occurring element; used in the making of steel and other alloys; chromium -3 or -6 are used for chrome plating, dyes and pigments, leather tanning, and other wood preservation
Strontium	Range = 120 – 640	ppb	Naturally-occurring element; historically commercial use of strontium has been in the faceplate glass of cathode-ray tube televisions to block x-ray emissions
Vanadium	Range = 0.3 – 1.6	ppb	Naturally-occurring element metal; used as vanadium pentoxide which is a chemical intermediate and a catalyst
Dioxane-d8	Range = ND – 0.1	ppb	Cyclic aliphatic ether; used as a solvent or solvent stabilizer in manufacture and processing of paper, cotton, textile products, automotive coolant, cosmetics and shampoos
Chlorodifluoromethane	Range = ND – 120	ppb	Occurs as a gas and used as a refrigerant, as a low-temperature solve, and used in fluorocarbon resins, especially tetrafluoroethylene polymers
Perfluorooctanoic acid – PFOA	Range = 8.13 – 31.8	ppt	Man-made chemical used in the manufacture of fluoropolymers. With non-stick and stain-resistant properties, fluoropolymers have a wide application in common household products such as cookware, carpet and all-weather clothing
Perfluorooctanesulfonic acid – PFOS	Range = ND – 13.9	ppt	Surfactant or emulsifier; used in fire-fighting foam, circuit board etching acids, alkaline cleaners, floor polish, and as a pesticide active ingredient for insect bait traps; U.S. manufacture of PFOS phased out in 2002

# What are we talking about?

- Hundreds of PFAS compounds including PFOA, PFOS & PFNA.
- Man-made chemicals that have been used for fire fighting and to make carpets, clothing, fabrics for furniture, paper packaging for food and other materials that are resistant to water, grease or stains.
- Widespread and extremely persistent in the environment.



# PFASs Discovered Throughout US



US EPA Detections

Source: Environmental Working Group

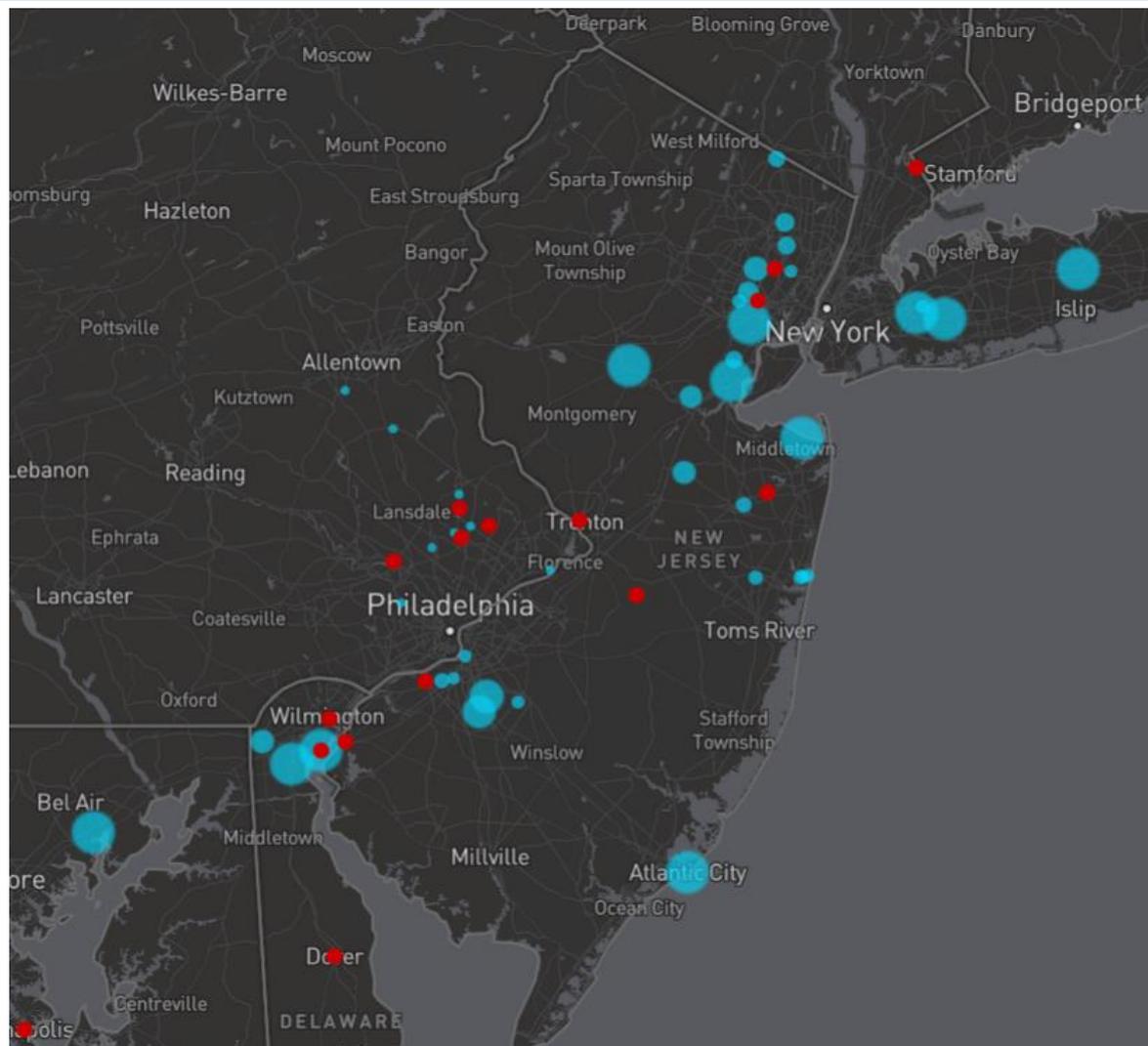
TOXIC FLUORINATED CHEMICALS IN TAP WATER AND AT INDUSTRIAL OR MILITARY SITES

[https://www.ewg.org/interactive-maps/2017\\_pfa/#.W46CC15KhPY](https://www.ewg.org/interactive-maps/2017_pfa/#.W46CC15KhPY)

# PFASs Discovered In New Jersey

US EPA Detections

Known  
Contamination Sites



Source: Environmental Working Group  
TOXIC FLUORINATED CHEMICALS IN TAP  
WATER AND AT INDUSTRIAL OR MILITARY  
SITES

[https://www.ewg.org/interactive-maps/2017\\_pfa/#.W46CC15KhPY](https://www.ewg.org/interactive-maps/2017_pfa/#.W46CC15KhPY)



# Changes in Technology

Unregulated contaminants present in the water supply for years are now being detected and evaluated because of enhanced data collection and testing capabilities.

- In 2014 and 2015: The minimum detection limit during these rounds of testing was 20 parts per trillion (ppt).
- Due to technological improvements since that time, detections as low as 2 ppt are now possible.



## USEPA PFOA & PFOS Drinking Water Health Advisories

Current US EPA health advisory level is set at 70 ppt for PFOA and PFOS, either in combination or individually.

- ❑ This health advisory level offers a margin of protection for all Americans throughout their life from adverse health effects resulting from exposure to PFOA and PFOS in drinking water.
- ❑ **Based on effects to the most sensitive populations, with a life-time of exposure to PFOA and PFOS from drinking water.**



# NJ DEP PFAS Drinking Water Guidance

NJ DEP currently has limited drinking water regulations or enforceable maximum contaminant levels (MCLs) for PFAS compounds.

NJ DEP has recently issued guidance and criteria for two PFAS compounds and set a standard for another:

- PFOA – 14 ppt, proposed MCL in October 2017. Reduced from 2007 guidance value of 40 ppt.
- PFOS – 13 ppt, proposed MCL in August/September 2018.
- PFNA – 13 ppt, MCL published September 2018.



# US EPA and NJ DEP Guidance

The scientific understanding of the toxicity and health effects of PFAS are evolving. PFOA and PFOS have been the most extensively produced and studied of these chemicals.

Contaminant	NJ DEP Guidance	US EPA Health Advisory Levels
PFOA	14 (Proposed MCL) Updated in October 2017; previously 40 ppt.	70 ** (Non-enforceable guidance) Announced in May 2016
PFOS	13 (Proposed MCL) August/September 2018	70 ** (Non-enforceable guidance) Announced in May 2016
PFNA	13 (MCL) Finalized September 2018	None Established

\*\* Total PFOA and PFOS levels either individually, or in combination



# RW Testing Results

- November 2017: NJ DEP notified RW about PFOA guidance.
- Late 2017/early 2018: RW began voluntary, regular monitoring at all active points of entry, based on NJ DEP recommendations.

Results Received To Date	Future Results Expected
Round 1 – January 16 *Round 2 – July 18	Round 3 – September Round 4 – December

\*Testing delayed due to majority of wells shutdown winter through spring.

- During R2 sampling, RW also voluntarily sampled purchased water from our SUEZ and Hawthorne interconnections.
- Samples analyzed for suite of 14 PFAS.
  - Reporting limit of 2 ppt.
- September 2018: NJ DEP notified RW about PFOS guidance.



# RW Testing Results

All Levels in Parts Per Trillion

Contaminant	NJ DEP Guidance	US EPA Health Advisory Levels Announced May 2016	RW Levels Detected Results from all active treatment plants
PFOA	14 (Proposed MCL) Updated in Oct. 2017 previously 40	70* (Non-enforceable guidance)	<b>Range</b> <b>8.13 – 30.6</b>  <b>System Average</b> <b>21.78</b>
PFOS	13 (Proposed MCL) August/September 2018	70* (Non-enforceable guidance)	<b>Range</b> <b>ND – 13.9</b>  <b>System Average</b> <b>6.82</b>
PFNA	13 (MCL) September 2018	None Established	<b>Range</b> <b>0.45 to 3.91</b>  <b>System Average</b> <b>1.38</b>

\* Total PFOA and PFOS levels either individually, or in combination



# RW Action Plan

## **In response, Ridgewood Water has and is taking action, including:**

- Shut down the Carr Treatment Plant.
  - Eliminated greatest potential for PFAS compounds to be introduced into the system.
- Inform all stakeholders. RW will continue to report levels and actions being taken to NJ DEP and our customers.
- Monitor on a set quarterly basis and include GenX compounds.
- Assess additional plants to be targeted for future treatment investments.
- Evaluate alternate treatment methods, in an effort to reduce installation and maintenance costs related to future treatment.
- Communicate with wholesale providers about their PFAS levels and collaborating on solutions for treatment.
- Determine sources of the contamination and seek funding from responsible parties.
- Seek legislative partners to push for coherent strategies for dealing with responsible parties.



# RW Treatment Plan

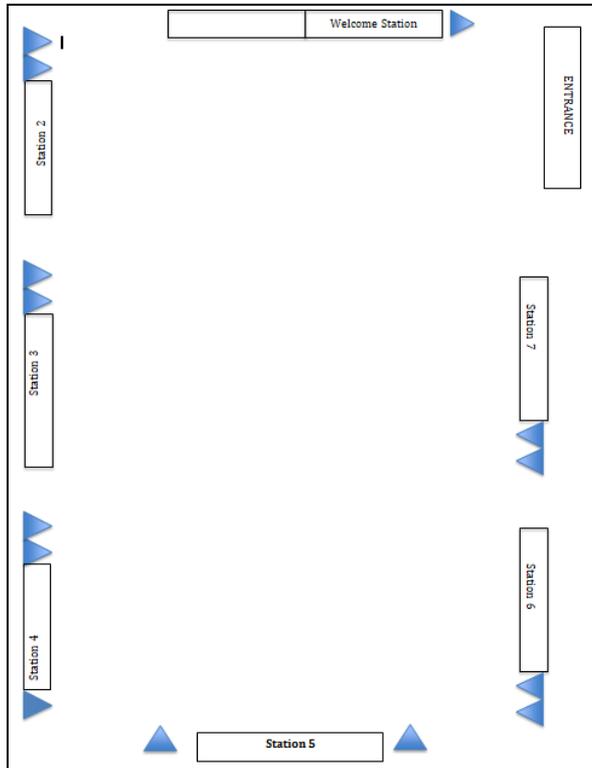
- Carr Treatment Plant online by Summer of 2019.
  - ▣ Using granular activated carbon (GAC), a technology proven to effectively reduce PFAS compound levels.
  - ▣ Total Carr Project Cost: More than \$3 million
- Reactivate Twinney Treatment Plant and evaluate use of ion exchange resin, instead of traditional carbon treatment.
- Program hydraulic model to determine which sources to target first with treatment. Aim for largest producers in each zone.
- Communicate with wholesale sources about their plans for treatment.



# RW Communications

- ❑ Inform and Educate – municipalities, sensitive populations and public.
  - ❑ Today's Webinar
  - ❑ Mailer – Supplement to Annual Drinking Water Report
  - ❑ Website
  - ❑ Host Water Quality Open Houses
    - ❑ Ridgewood
    - ❑ Wyckoff
    - ❑ Midland Park
    - ❑ Glen Rock

# Community Information Open Houses



Typical  
Open House Room Layout

- Open format to encourage increased participation and dialogue
- Graphics and information boards so residents can stop by at their convenience and not miss any information
- Information Stations attended by Ridgewood Water Representatives, Subject Matter Experts to answer questions
- NJ DEP, NJ DOH and US EPA will be invited and encouraged to participate



# Challenges

- ❑ While the technology exists to measure smaller and smaller amounts of emerging contaminants, the science to understand the meaning of these levels is still evolving.
- ❑ While RW will provide information for state and government resources where additional information can be found,
  - ❑ RW cannot instruct or advise individuals on actions they can or should take.
- ❑ NJ DEP and US EPA resources and support are strained due to both statewide and nationwide impacts.



# Resources

Because PFAS compounds are widespread in the environment, many organizations are working to better understand how exposure to them might affect people's health.

Here are links to a few additional resources:

- [www.state.nj.us/health/ceohs/documents/pfas\\_drinking%20water.pdf](http://www.state.nj.us/health/ceohs/documents/pfas_drinking%20water.pdf)
- [www.nj.gov/dep/srp/emerging-contaminants/](http://www.nj.gov/dep/srp/emerging-contaminants/)
- [www.atsdr.cdc.gov/pfas/index.html](http://www.atsdr.cdc.gov/pfas/index.html)
- [www.epa.gov/pfas](http://www.epa.gov/pfas)

# Questions?

**QUESTIONS**

