

# Drinking Water in Rye

November 16, 2023

6:30pm Rye Public Library

Recorded Video: [https://www.townhallstreams.com/stream.php?location\\_id=66&id=56143](https://www.townhallstreams.com/stream.php?location_id=66&id=56143)

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**Rye Water  
District**



**Eversource/  
Aquarion Water**



**Portsmouth  
Water**



**Private Wells**



## Rye Hydrology

## Who are the Water Suppliers

- Rye Water District
- Aquarion / Eversource
- Portsmouth Water
- Private Wells

## What Impacts our Water

- Storm Water Run Off
- Land use
- Landfills
- Septic systems
- Irrigation

## Comparing Rye Options

*Rye is intricately tied to water resources of many kinds.*

### [Natural Resources Inventory 2021](#)

*Rye contains approximately 2,563 acres of mapped wetlands, representing approximately 30% of the town's total area.*

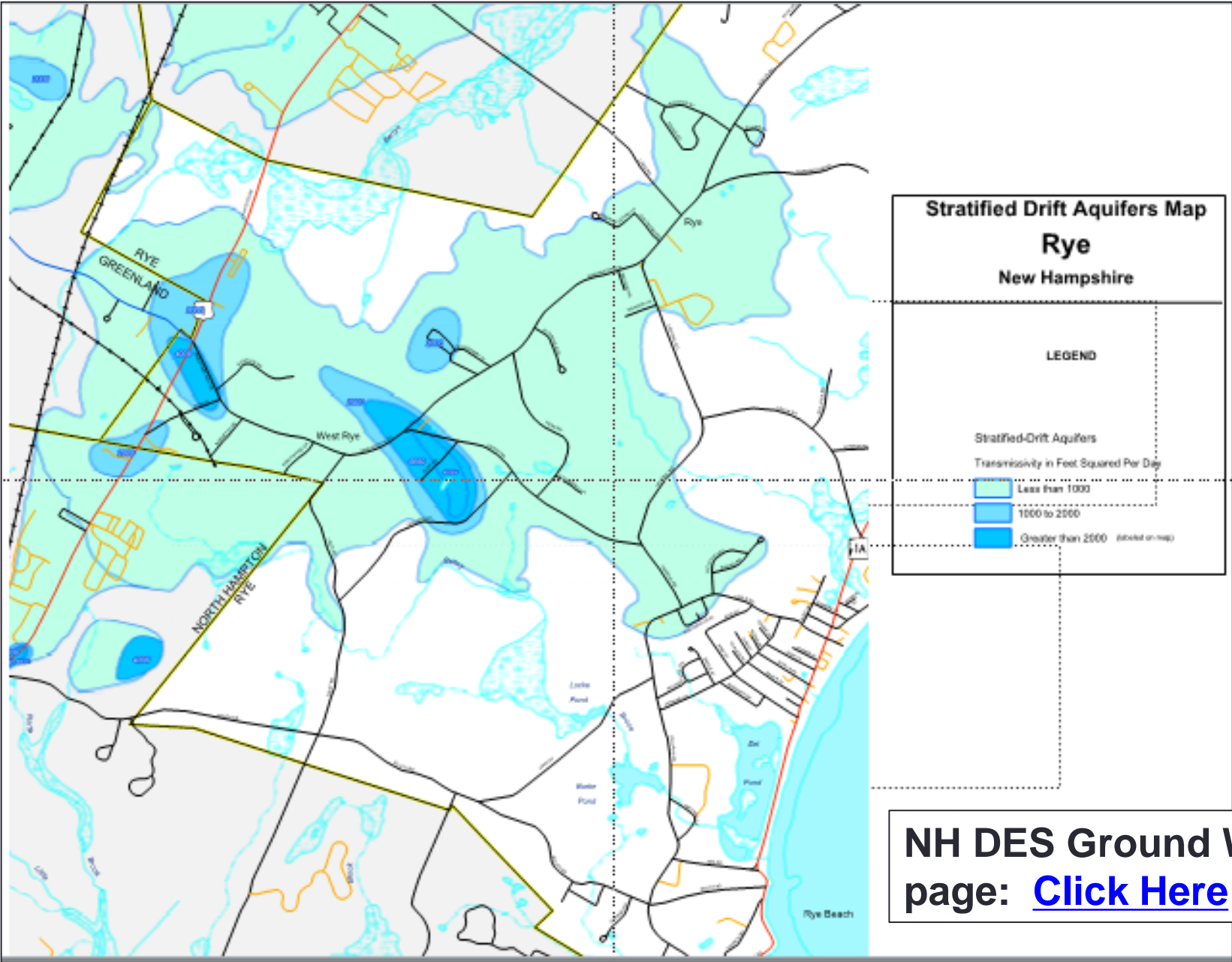
*Our quality of life and health depends on these resources.*

*We take a look at the public water supplies, their protection or lack thereof, and the threats to our water resources.*

# RYE HYDROLOGY

## Aquifers and Groundwater Use

- Utilization of New Hampshire's water resources falls under common law approach.
- All landowners have the opportunity for reasonable use of water as long as it does not adversely impact other water users.
- We extract groundwater for use as drinking water, domestic and commercial uses, industrial and manufacturing uses, irrigation uses and bottling water.
- NH law gives the State Department of Environmental Services (DES) authority over permitting the withdrawal of groundwater in large quantities (greater than 57,600 gallons per day) and the authority to approve smaller groundwater withdrawals for public water systems. The state also has authority to steward water resources and water quality and enforce laws and regulations.
- With state authority the flow of water does not follow political/municipal boundaries.
- The laws and rules related to larger groundwater withdrawals require extensive permitting, testing and analysis to determine reasonable use and potential adverse impacts.





# Rye is a GA1 Ground water [2020 Fact Sheet](#)

Table 1 Groundwater Classifications	
Class	Description
GAA	<ul style="list-style-type: none"> <li>• Delineated Wellhead Protection Areas</li> <li>• Prohibits new and monitors existing high risk uses (e.g., landfills)</li> <li>• Authorizes active management on local level</li> </ul>
GA1	<ul style="list-style-type: none"> <li>• Groundwater of high value for present or future drinking water</li> <li>• No land use prohibitions</li> <li>• Authorizes active management on local level</li> </ul>
GA2	<ul style="list-style-type: none"> <li>• Potentially valuable stratified drift aquifers defined by USGS</li> <li>• No land use prohibitions</li> <li>• No active management</li> </ul>
GB	<ul style="list-style-type: none"> <li>• All groundwater not assigned to a higher class</li> <li>• No land use prohibitions</li> <li>• No active management</li> </ul>

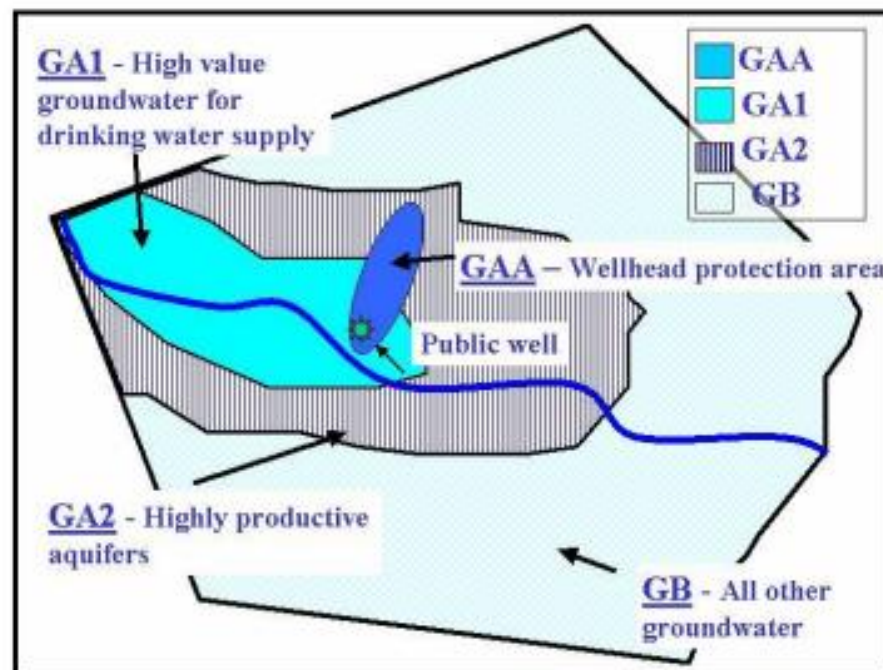
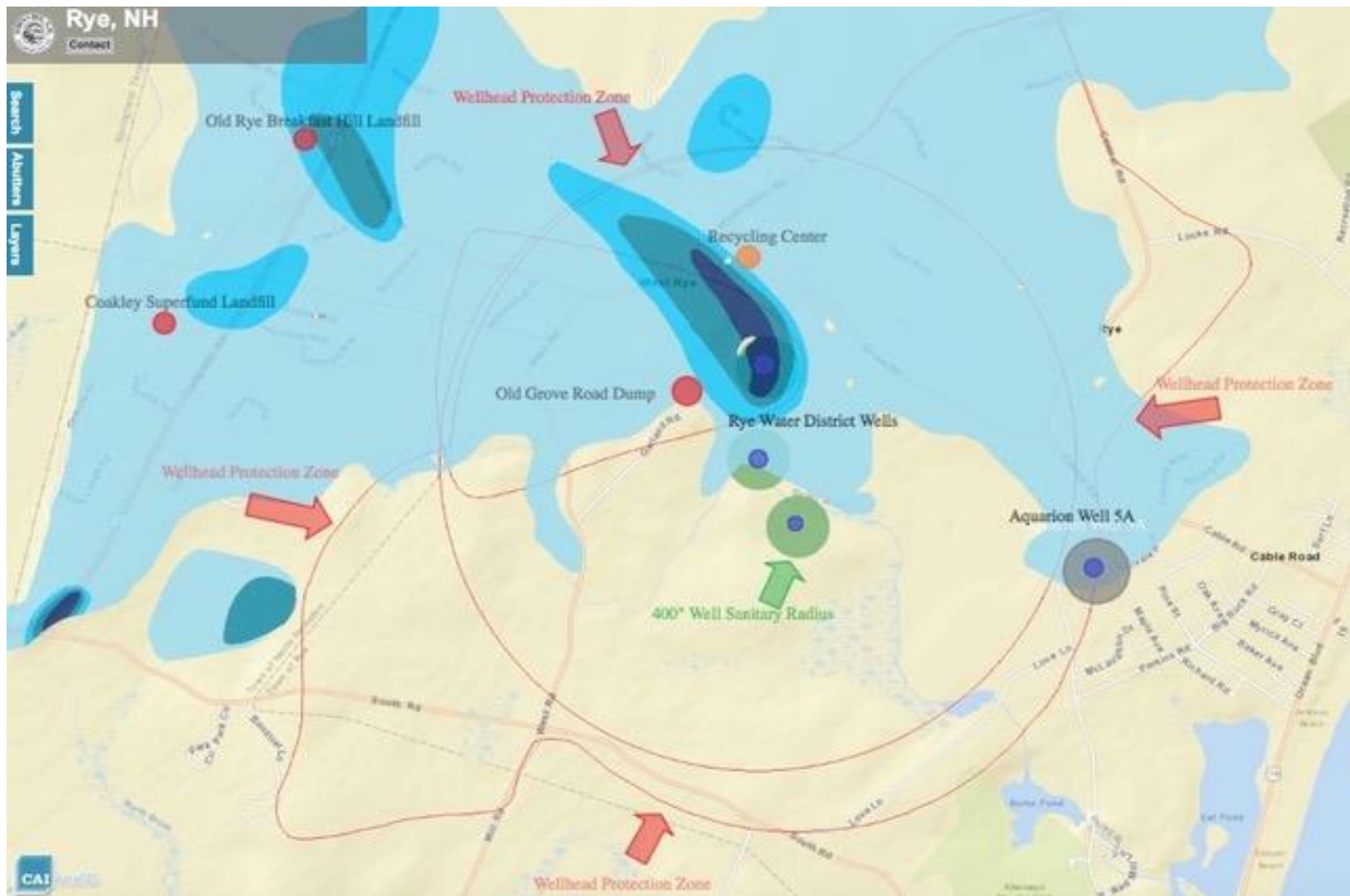


Figure 1. Example of Groundwater Reclassification Zones.



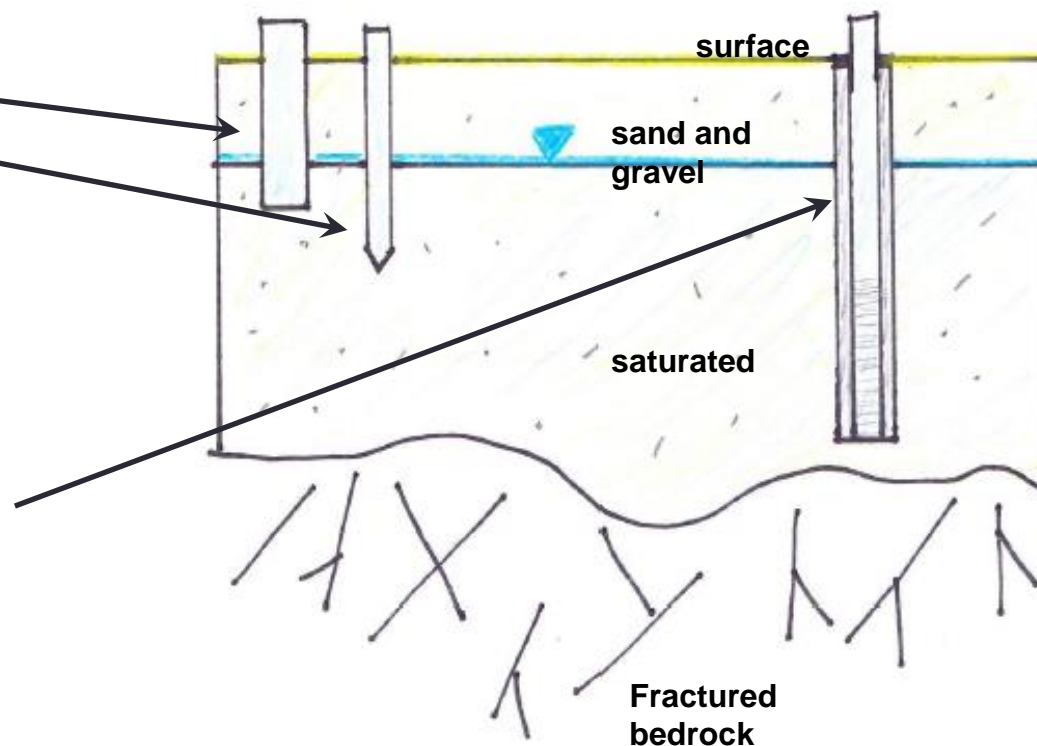
Green Circles are Wellhead Protection. Larger Red Circles are aquifer protection zone

# Sand and Gravel Well Types

Water flows through pores between grains of sand and gravel – relatively **high transmissivity**

RWD Garland and Aquarion Well 5A are these type of wells. RWD blends Garland with the two bedrock wells.

- **Shallow wells** – domestic/agriculture
  - Dug well
  - Driven well point
  - Sensitive to water level change
  - Vulnerable to surface contamination
  - Usually <20' deep
- **Deep gravel-packed well** – municipal or commercial
  - Gravel pack increases transmissivity
  - Less sensitive to seasonal changes or drought
  - Deeper wells for more storage and yield





# Bedrock Well Types

*Groundwater flows to wells via fracture zones – **lower transmissivity***

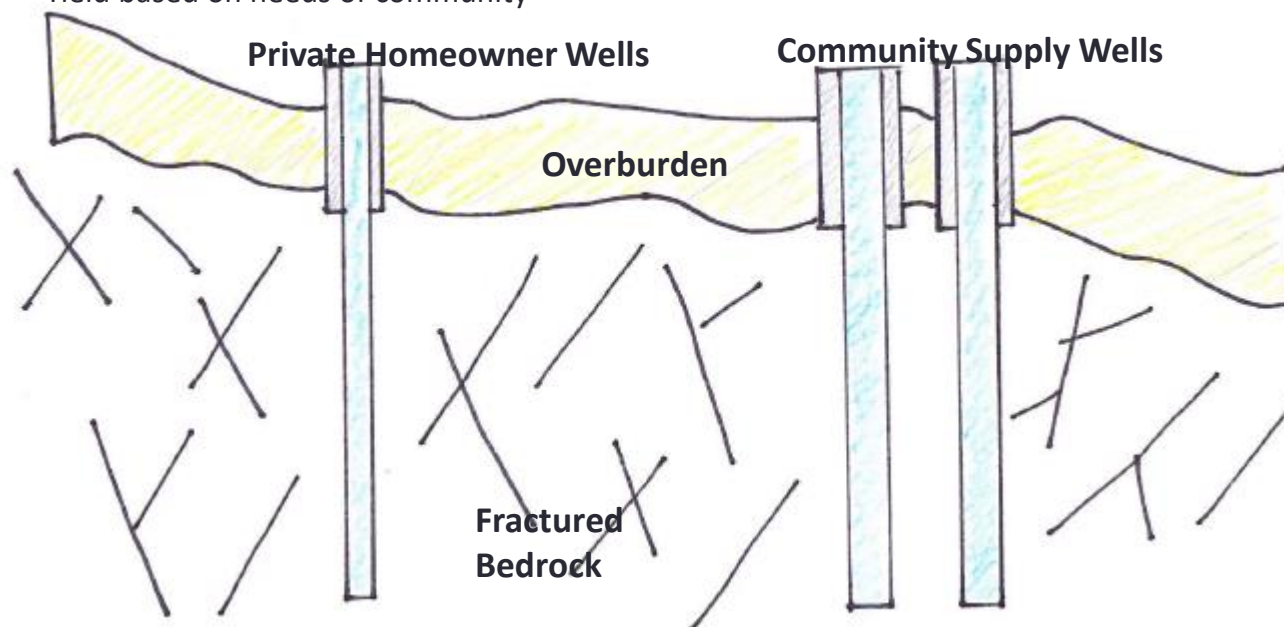
## Private homeowner wells

- Casing Driven to bedrock – open borehole in bedrock
- Large storage capacity
- Yield 5 gpm+

## Larger community supply wells

- Casing driven to bedrock– open borehole in bedrock
- Duplicate wells for backup
- Yield based on needs of community




RWD Bailey Brook Well and Cedar Run are this type. These wells contain elevated levels of iron (Fe) and manganese (Mn) – Can tint water and leave red and black stains on plumbing/porcelain fixtures. Blending with the Garland Well reduces overall levels in water supply.



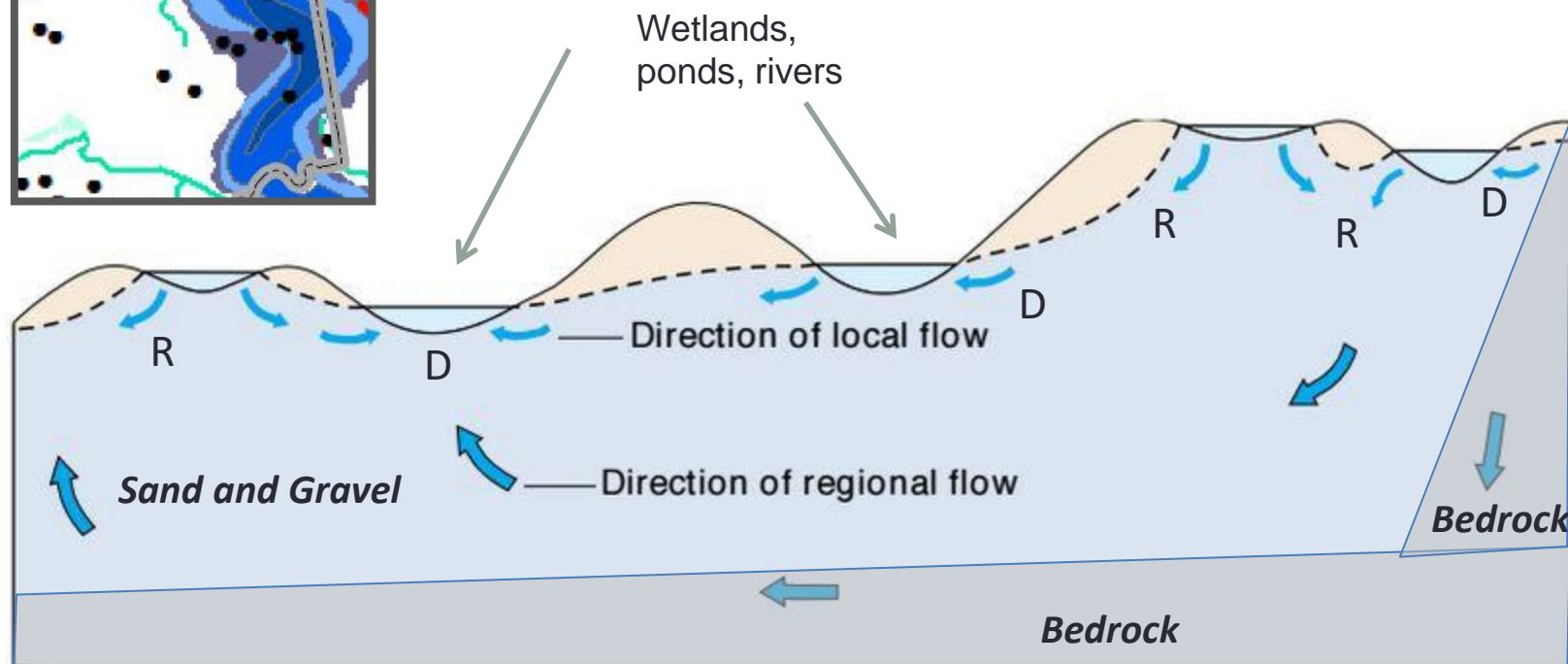
## Surface water and groundwater are Interconnected

Sand and Gravel  
Aquifer



-  Wetland
-  Stream
-  Aquifer: Highest Transmissivity

In sand and gravel, groundwater flow is similar to land contours.



Winter et al. 1998

**R – Recharge to Groundwater**

**D – Discharge to wetlands and surface water**

 **Wetlands, Rivers, Ponds, or Lakes**

# RYE WATER SUPPLIERS





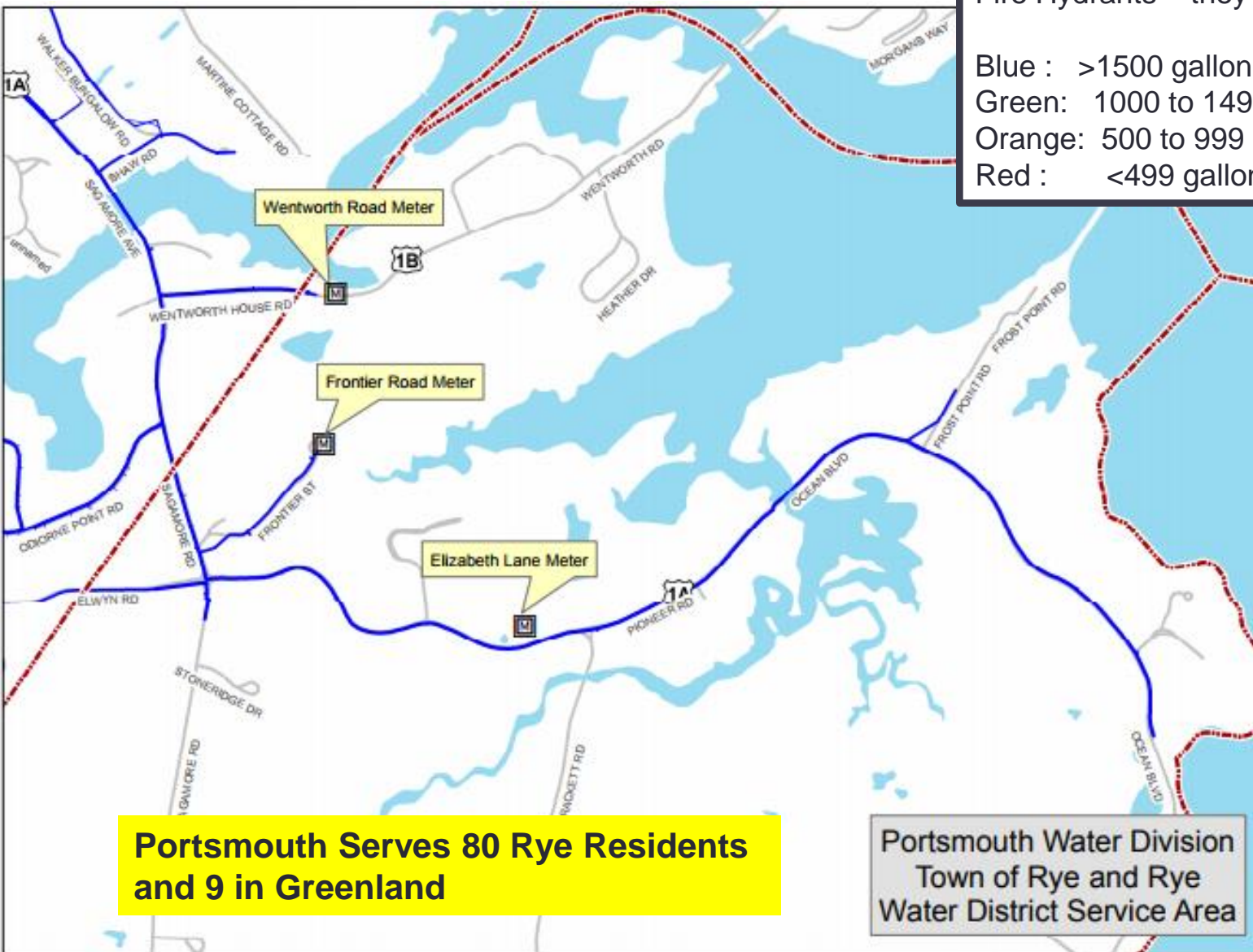
Cap colors are different on Portsmouth Fire Hydrants – they follow this standard

Blue : >1500 gallons per minute

Green: 1000 to 1499 gallons per minute

Orange: 500 to 999 gallons per minute

Red : <499 gallons per minute





## How it works:

- NH 1899 Session Law granted Portsmouth the authority to supply Newington, Greenland, New Castle and parts of Rye with water services.
- Rye Water District buys water “Wholesale” from Portsmouth and bills Rye customers. Some properties are supplied directly from Portsmouth
- Properties are assessed the same RWD tax for the fire-hydrants
- Annual fee is \$255 for 5/8 connection (RWD is \$133)

## **Portsmouth Water:**

There are two supplies in Portsmouth

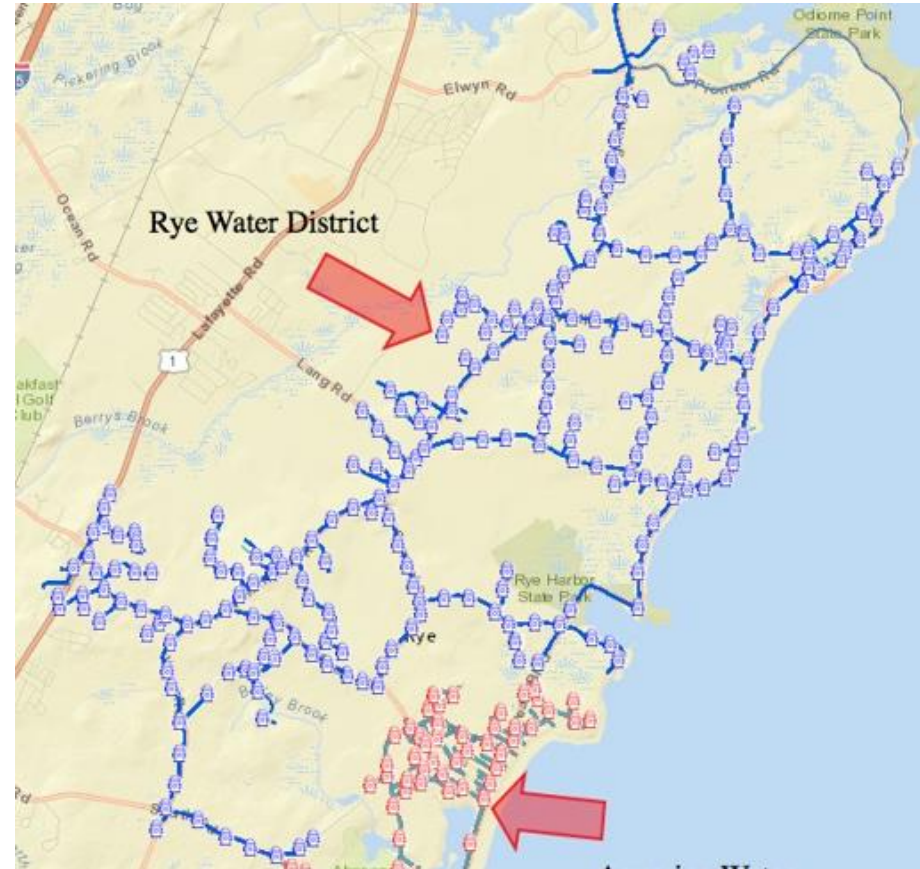
- Bellamy Reservoir in Madbury that is an for Portsmouth
- Pease Trade Port well system

Pease has a new PFAS Treatment Center  
Bellamy PFAS are low

Sample Point	PFHxS	PFNA	PFOS	PFOA	% of Water Supply (last 12 months)
NH MCL in Parts per Trillion (PPT)	18	11	15	12	---
Madbury Treatment	ND	ND	ND	2	70.3%
Madbury Well 2	ND	ND	ND	4	4.1%
Madbury Well 3	ND	ND	ND	3	2.3%
Madbury Well 4 & 4R	ND	ND	ND	ND	3.9%
Madbury Well 5	ND	ND	ND	4	1.0%
Collins Well	2	ND	3	3	2.4%
Greenland Well	1	ND	4	4	10.0%
Portsmouth Well	7	ND	5	5	6.0%
PEASE International Tradeport Treated Water	ND	ND	ND	ND	Pease Only



- District formed in 1948
- Independent from the Town of Rye
- District elects 3 member Commission to manage RWD. Annual Meeting – Last Saturday of March
- Superintendent, Business Manager and three Operators
- Provides water to 85% of Rye. 1700 customers (4500 residents)
- 2/3 of Rye is served by the 300 RWD Hydrants
- Office 60 Sagamore Rd. 1<sup>st</sup> Wednesday of the Month 9:00am
- About 50% of homes use about 20% of the water, the other 50% use 80% of RWD



**NOT**





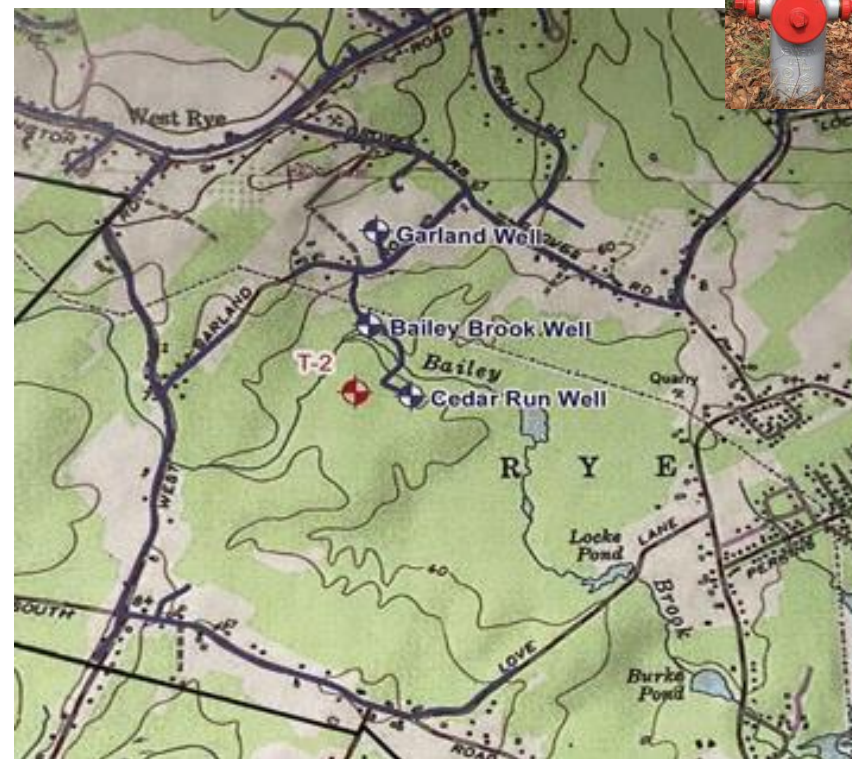


## Rye Water District

*From RWD September 26, 2023  
Presentation*

### **RWD Assets:**

- 3 WELLS (Garland, Bailey Brook and Cedar Run), 4 PUMPING
- 1 Process Control Facility
- 3 Storage Tanks  
Washington Rd & Breakfast Hill Rd
- 300 FIRE HYDRANTS (RED/SILVER)
- 49 Miles of Water Infrastructure
- Land, Grove Rd. Dump, Buildings  
4 Vehicles & equipment
- 2023 Budget of \$2,159,445 and \$60K  
of warrant articles. [Click Here](#)





Aquarion serves 802 customers in the Rye Beach and Jenness Beach Districts. 7% of Rye.

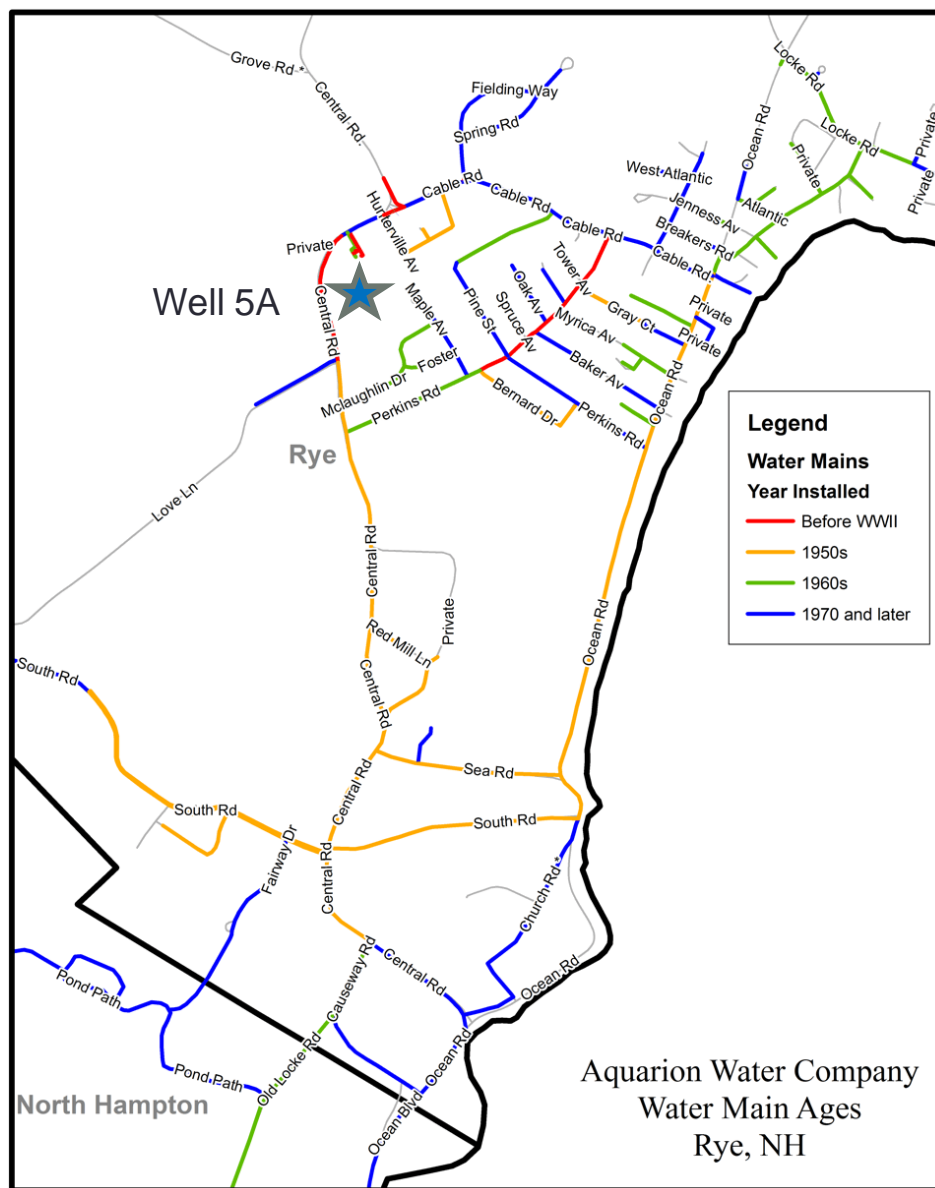
Well 5A on Central Road.

System is connected, with treatments connected to one or more wells

Oct. 26, 2023 [Customer Advisory](#)

Eversource acquired Aquarion in 2017. \$880M Cash and took on \$795M in debt

[Aquarion 2023](#) Net Income: \$46.7M



## Aquarion Wells

- Little River Treatment Plant for wells 7 & 22. 2024 Construction, 2025 start [Click Here](#)

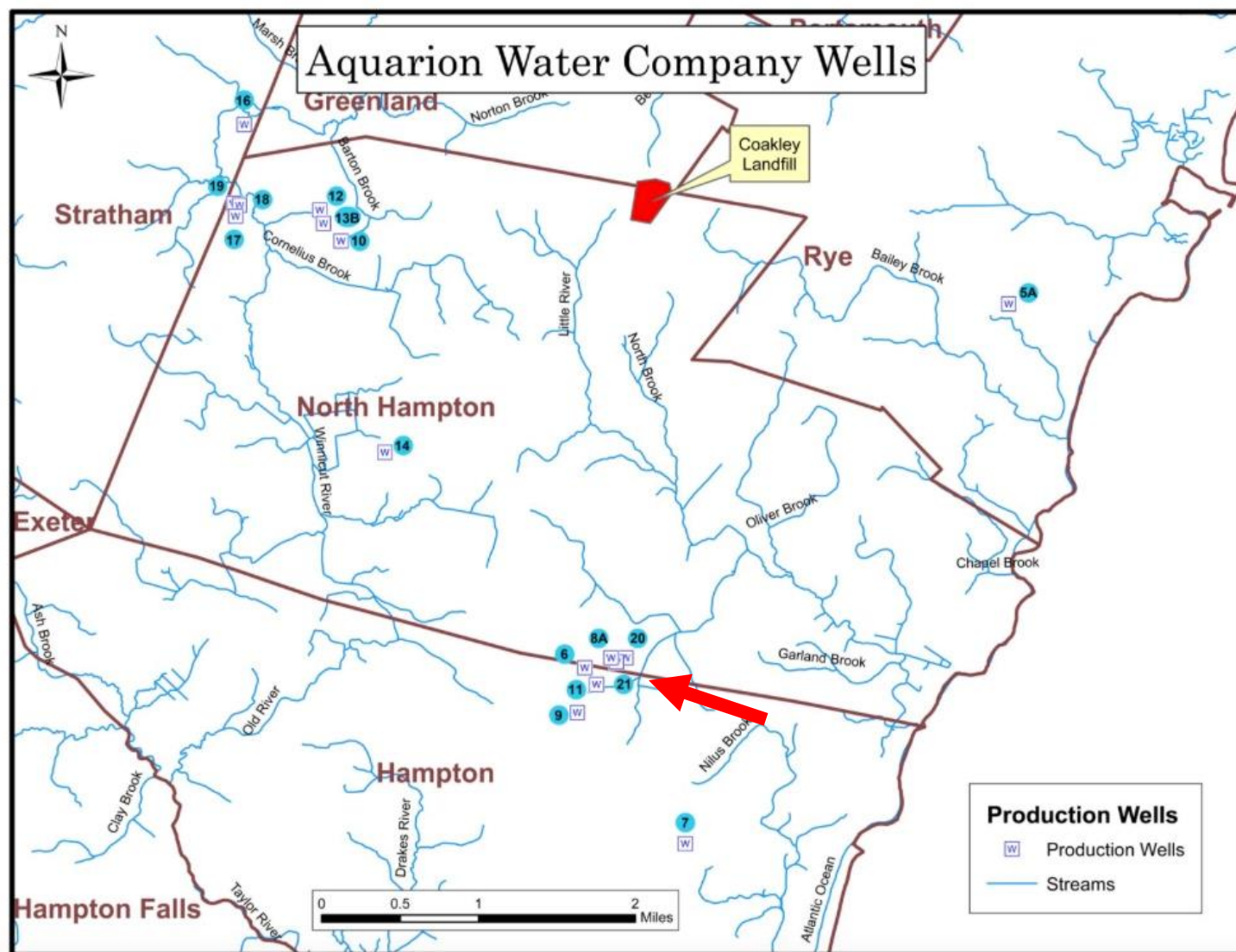
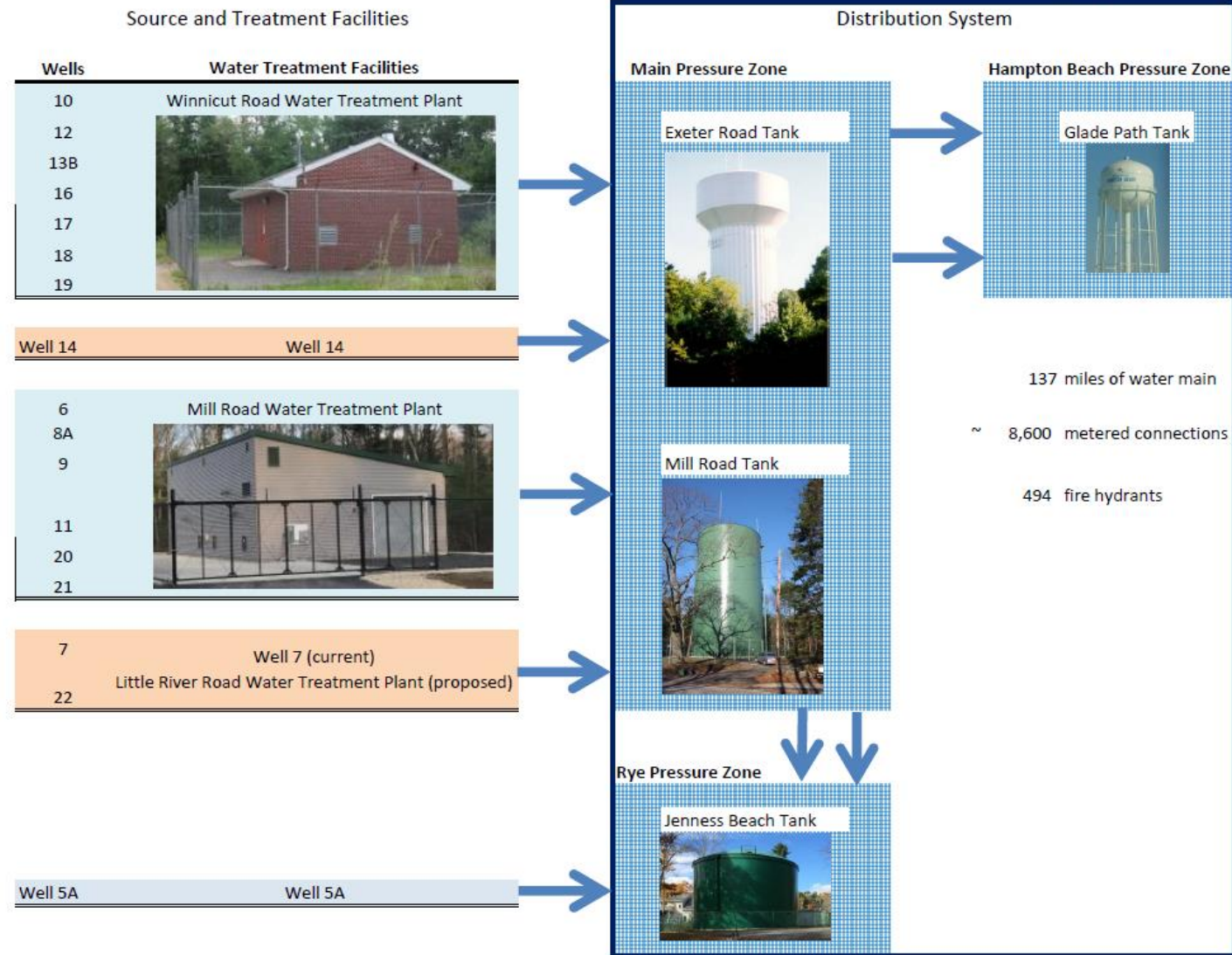


Exhibit 1 - Water System Schematic



**Contaminants and Testing Frequency**

<b>Testing Frequency</b>	
<b>Standard Analysis</b> Arsenic Bacteria Chloride Copper Fluoride Hardness Iron Lead Manganese Nitrate/Nitrite pH Sodium Uranium	Every 3 to 5 years (except for bacteria and nitrate, which are recommended yearly)
<b>Radiological Analysis</b> Radon Uranium Analytical Gross Alpha	Every 3 to 5 years
<b>PFAS</b>	Every 3 to 5 years
<b>VOCs</b>	Every 3 to 5 years

TEST and get:

Free treatment or connection to municipal water.

November 15<sup>th</sup> was the Seacoast Private Well Worship.

Contact Amy Hudnor NHDES Private Well Coordinator [welltest@nh.gov](mailto:welltest@nh.gov)

NH DES Private Wells page: [Click Here](#)

NH DES Potable Water Definition & Codes [Click Here](#)

NH DES Why test: [Click Here](#)

NH DES What to test for: [Click Here](#)





# WHAT IMPACTS OUR WATER

## Drinking water contaminants—human-caused and natural



**Pollutants** in groundwater in some areas (PFAS & MtBE)

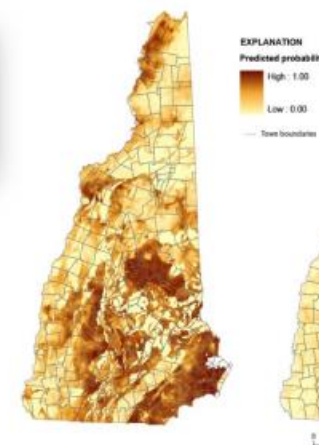


Human-caused contaminants leaching into water from **plumbing** (lead & copper)

**Natural** contaminants in groundwater from geology (arsenic, uranium & radon)  
Or from living things (Coliform Bacteria)



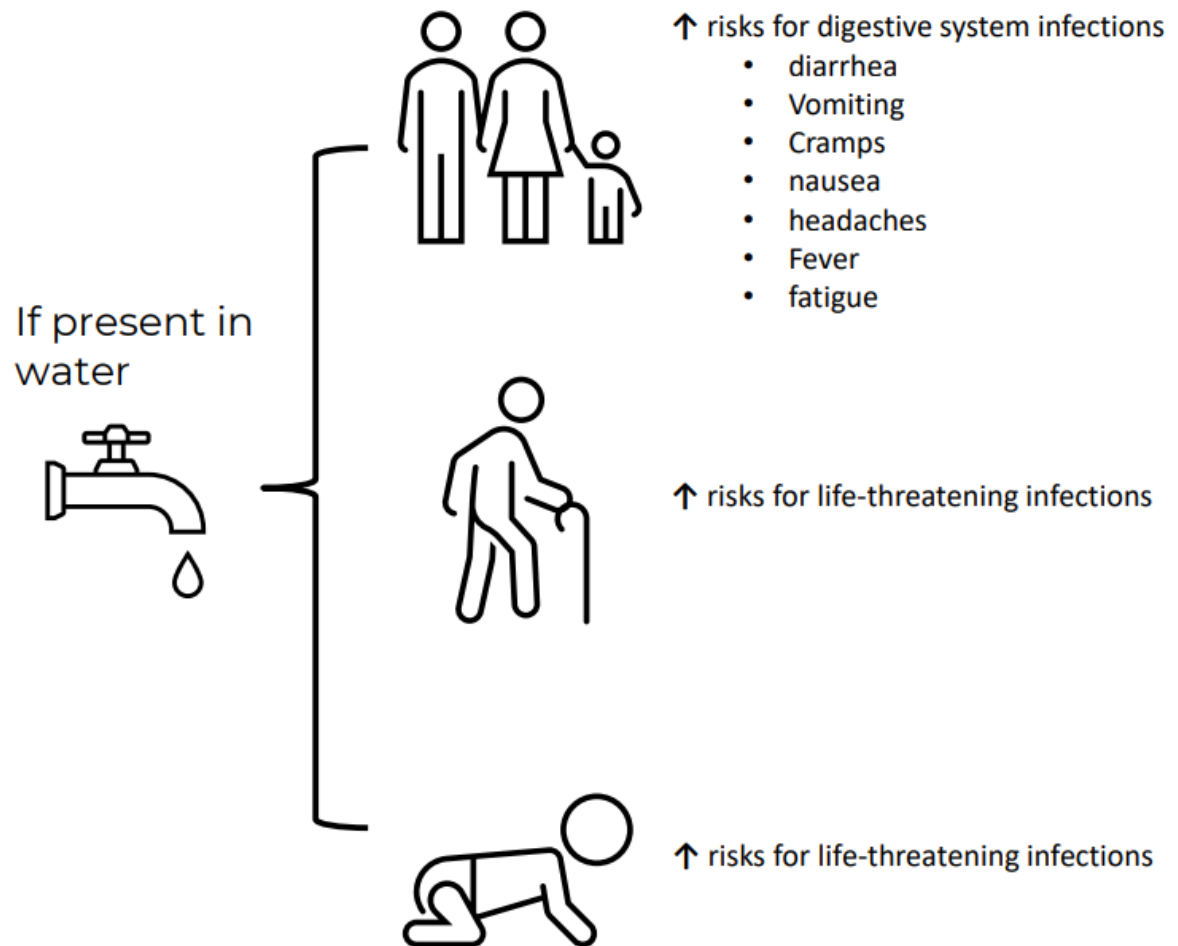
A. Arsenic  $\geq 1$   $\mu\text{g/L}$  model



## E. coli

A bacteria found in the fecal matter of mammals, including humans.

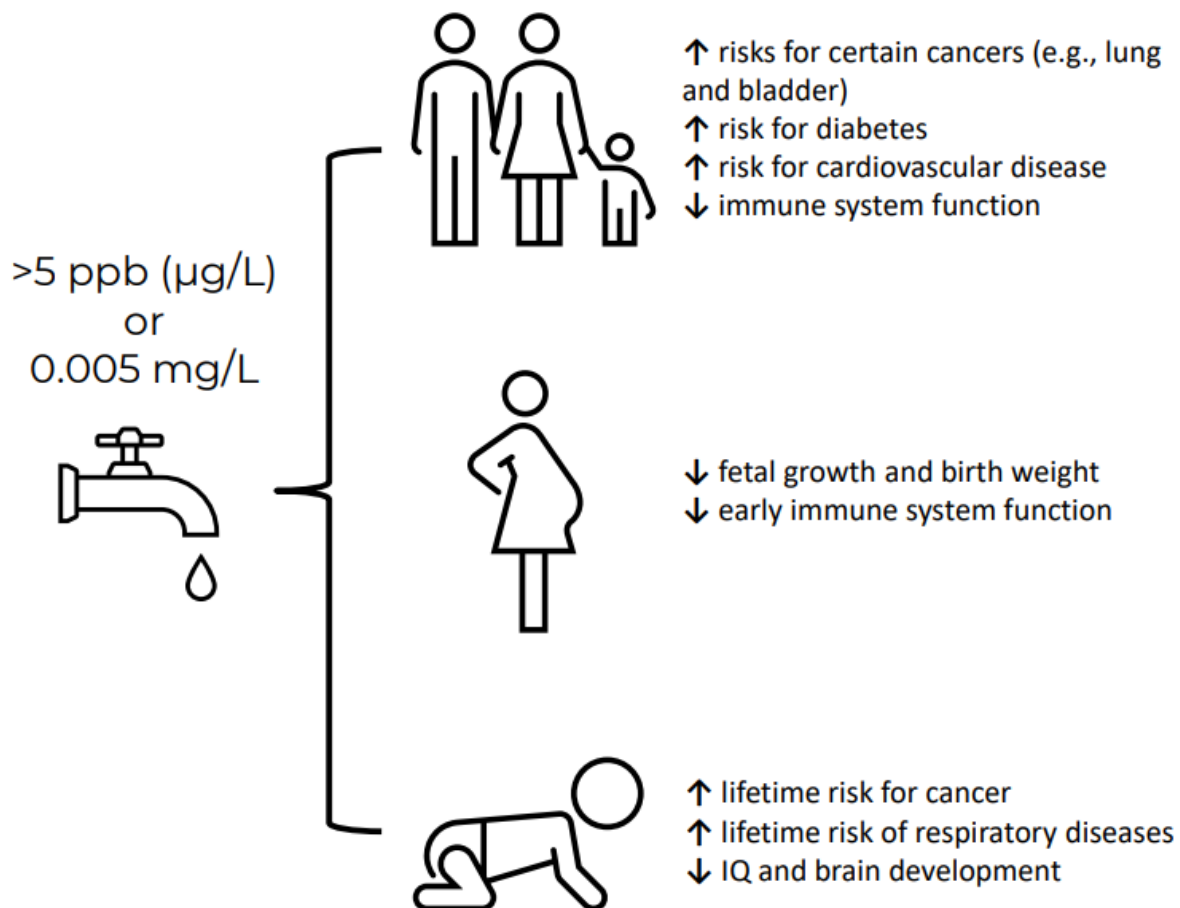
**An immediate health hazard.**



PROVIDED BY NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES

# Arsenic

Arsenic is a naturally-occurring **element common in NH bedrock.**



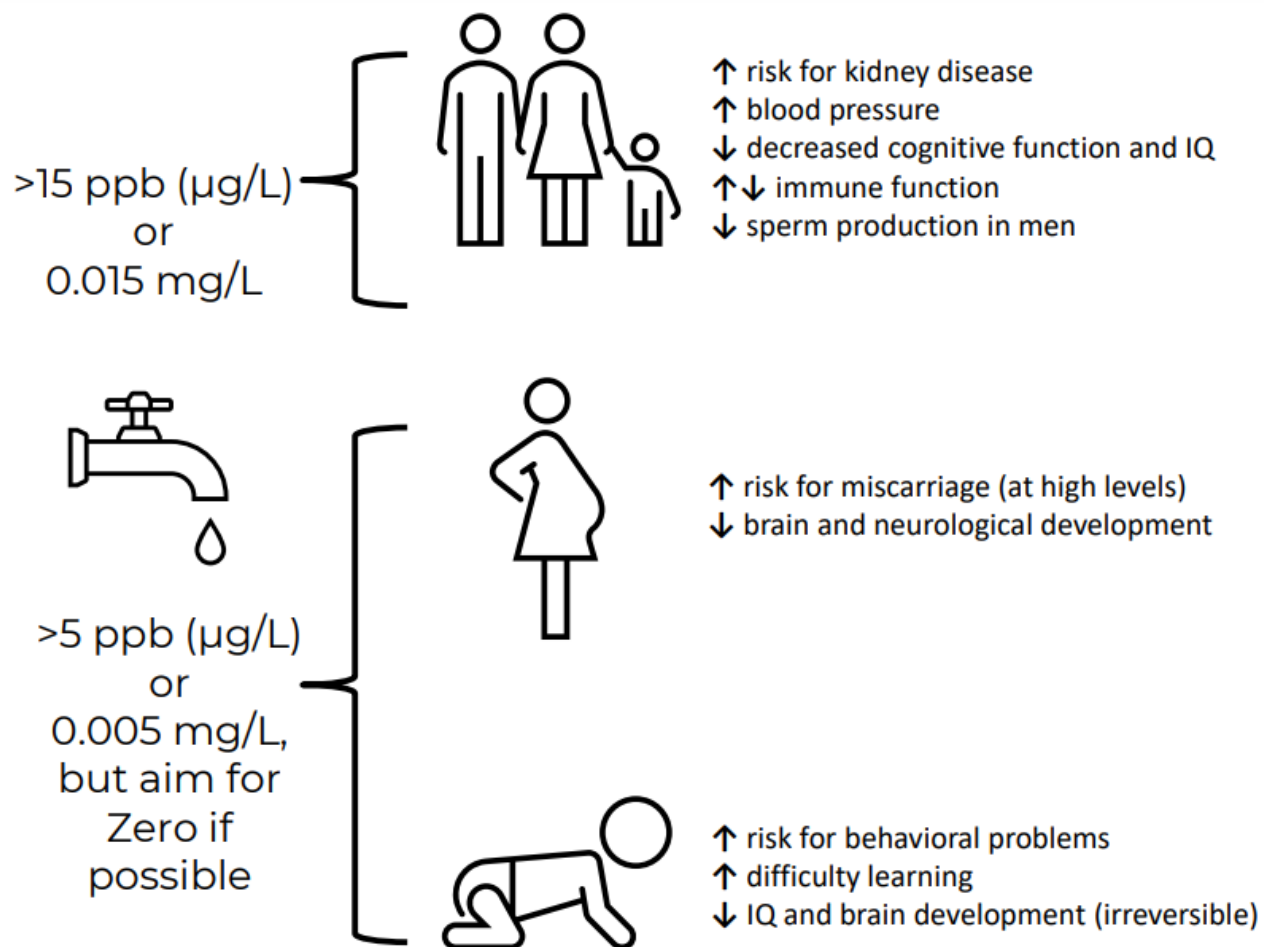
PROVIDED BY NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES



# Lead

A natural element that was widely used in industry until its harm was recognized.

Found in **older plumbing** and leaches into “stagnant” water.

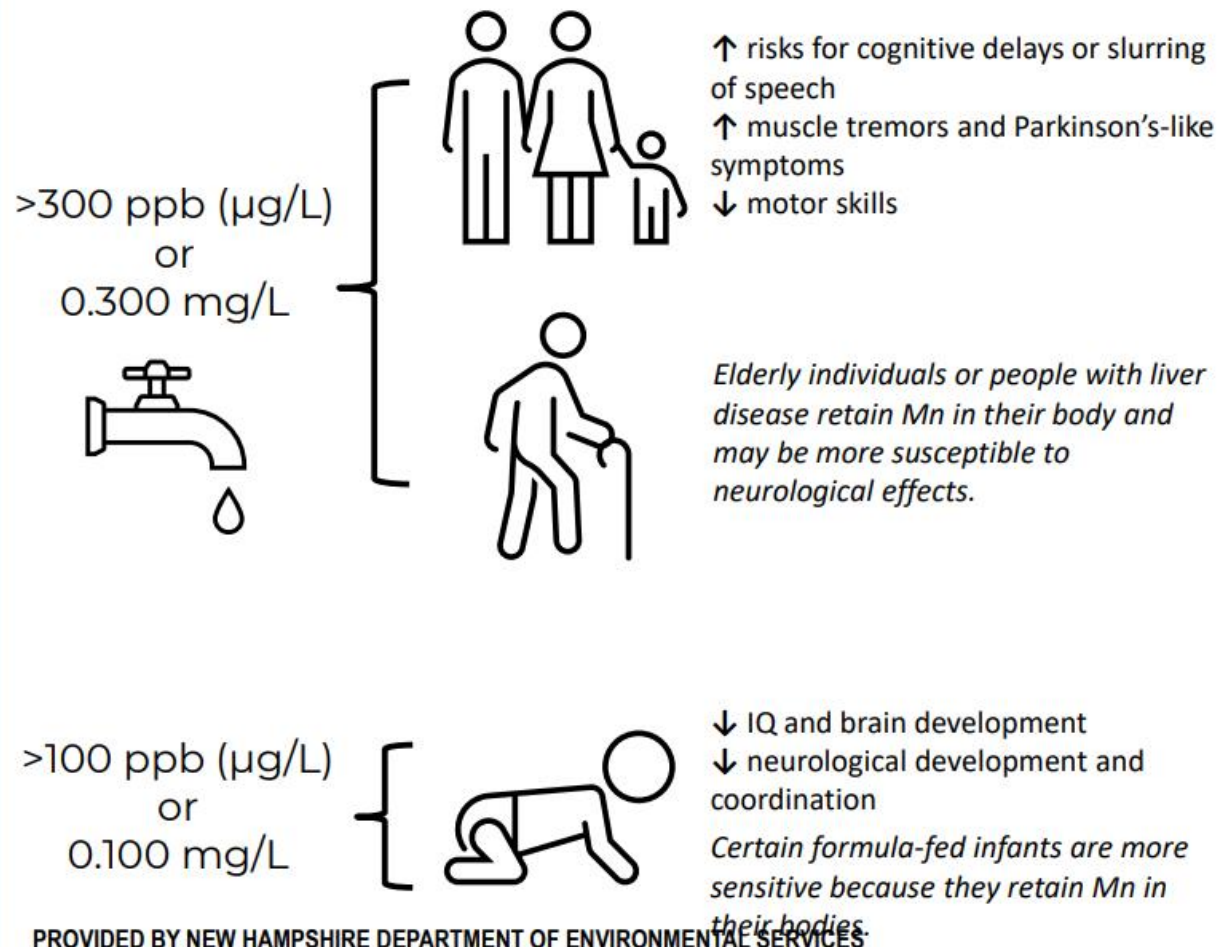


PROVIDED BY NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES

# Manganese

An essential nutrient at low levels, but a toxin at high levels.

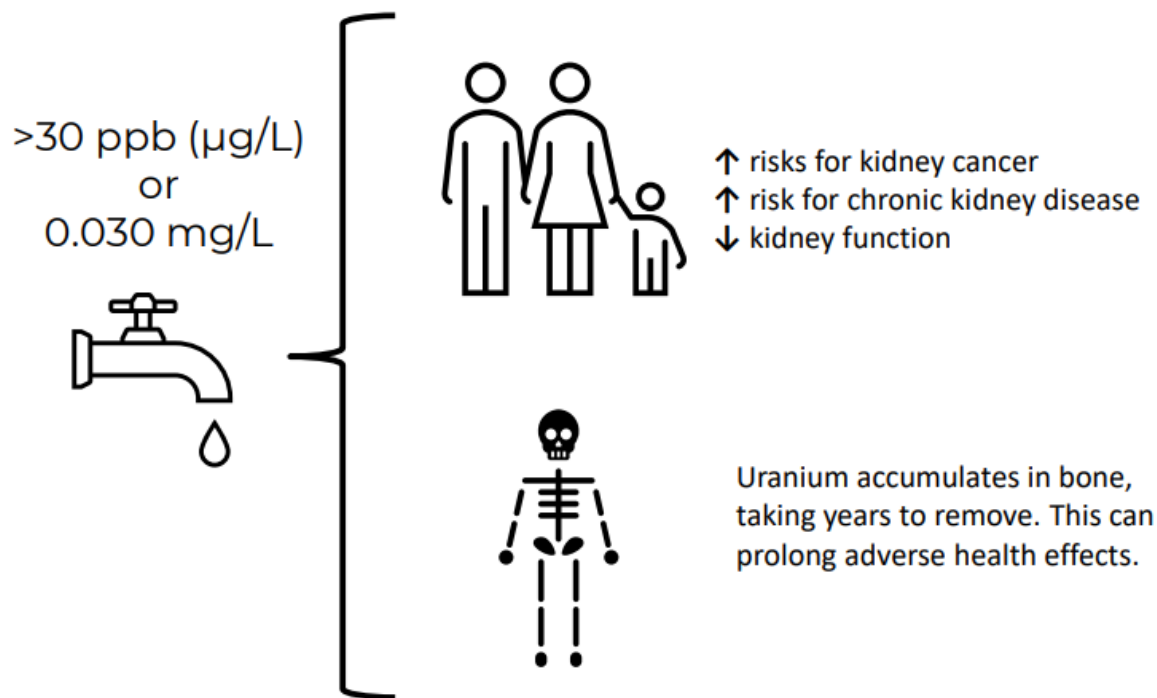
Manganese is a **naturally-occurring element common in NH bedrock.**



# Uranium

Uranium is a **naturally-occurring element common in NH bedrock.**

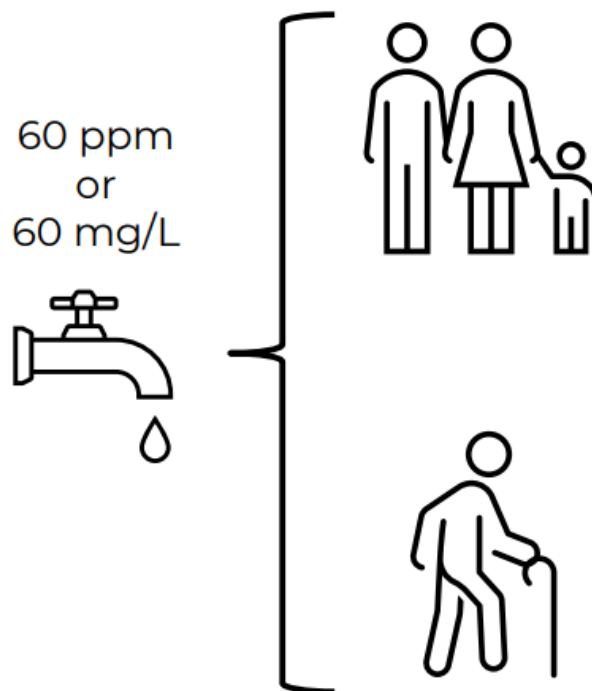
Primarily a chemical hazard in wells, with radioactivity playing a very minor role.



## Sodium (Salt)

This can be **naturally-occurring, or the result of road salting or water softeners.**

A health hazard for those with pre-existing conditions.



Altered taste of water, which may be unnoticeable to some people.

- ↑ risks for people on “restricted salt” diets
- May be a risk for people with pre-existing hypertension or chronic kidney disease

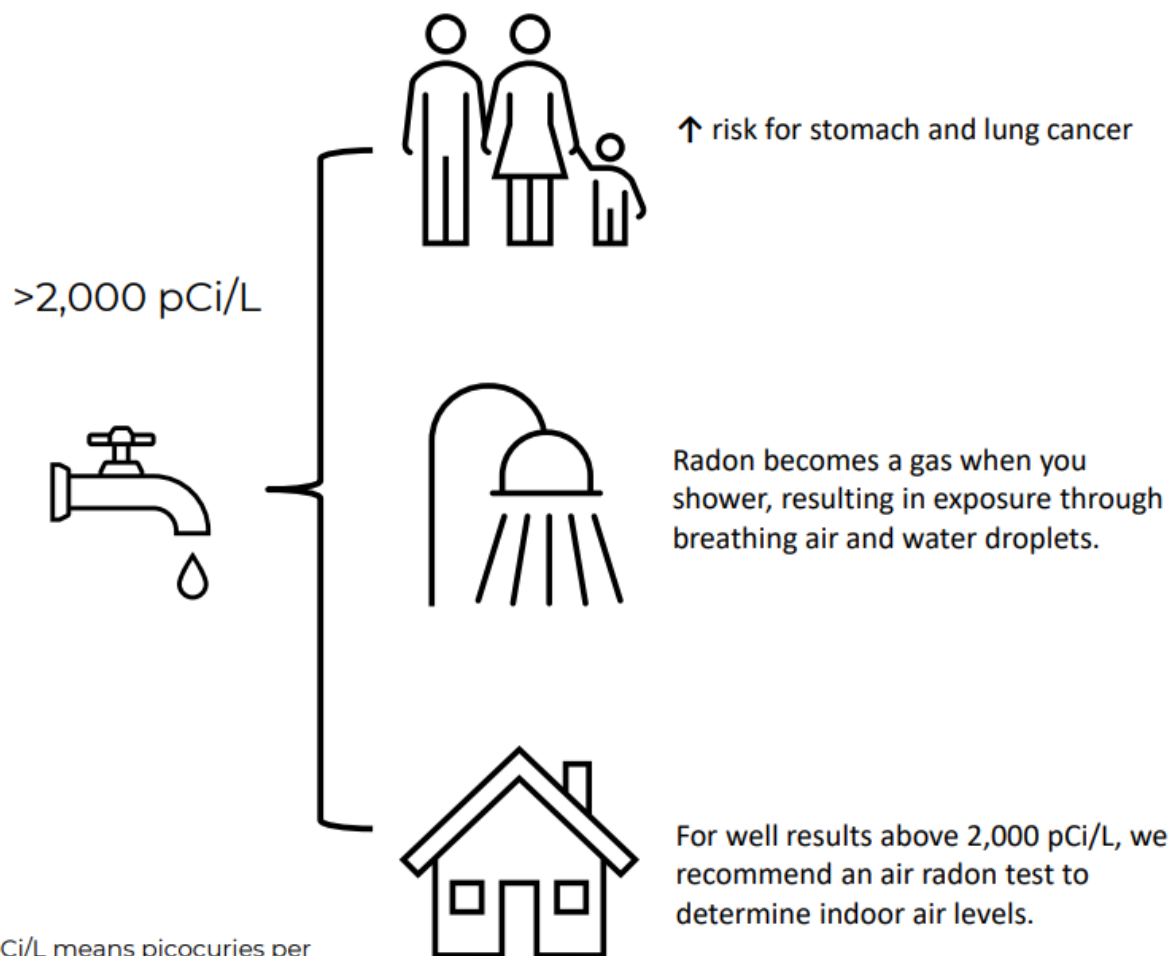


# Radon

A naturally-occurring, **radioactive gas found in NH bedrock.**

A wide-spread and potent carcinogen in our environment.

Consider air and water results



\*pCi/L means picocuries per Liter; this is a measure of radon's radioactivity per liter of water.

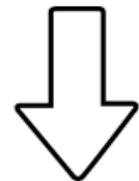
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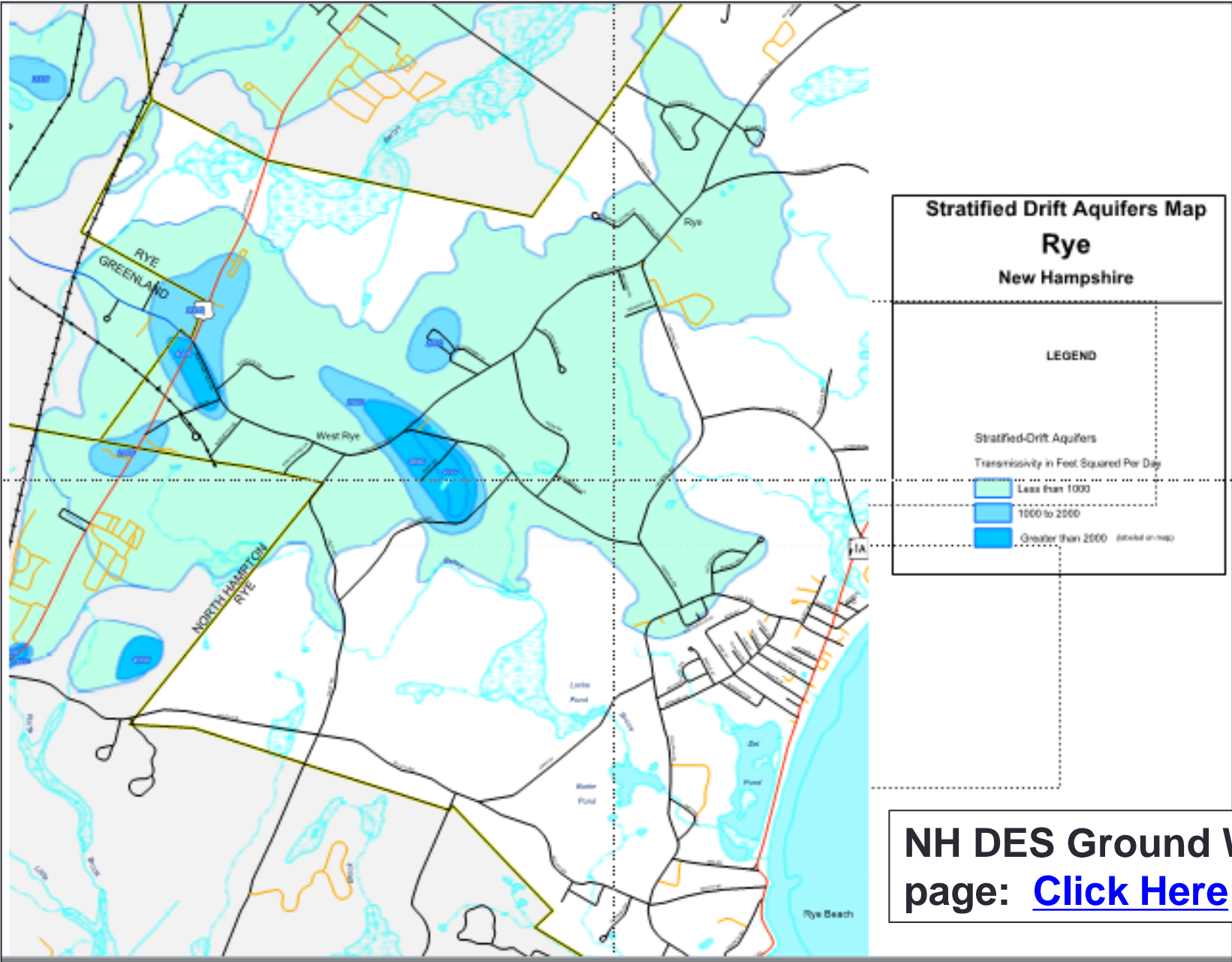
More about  
radon, because it's  
complicated:

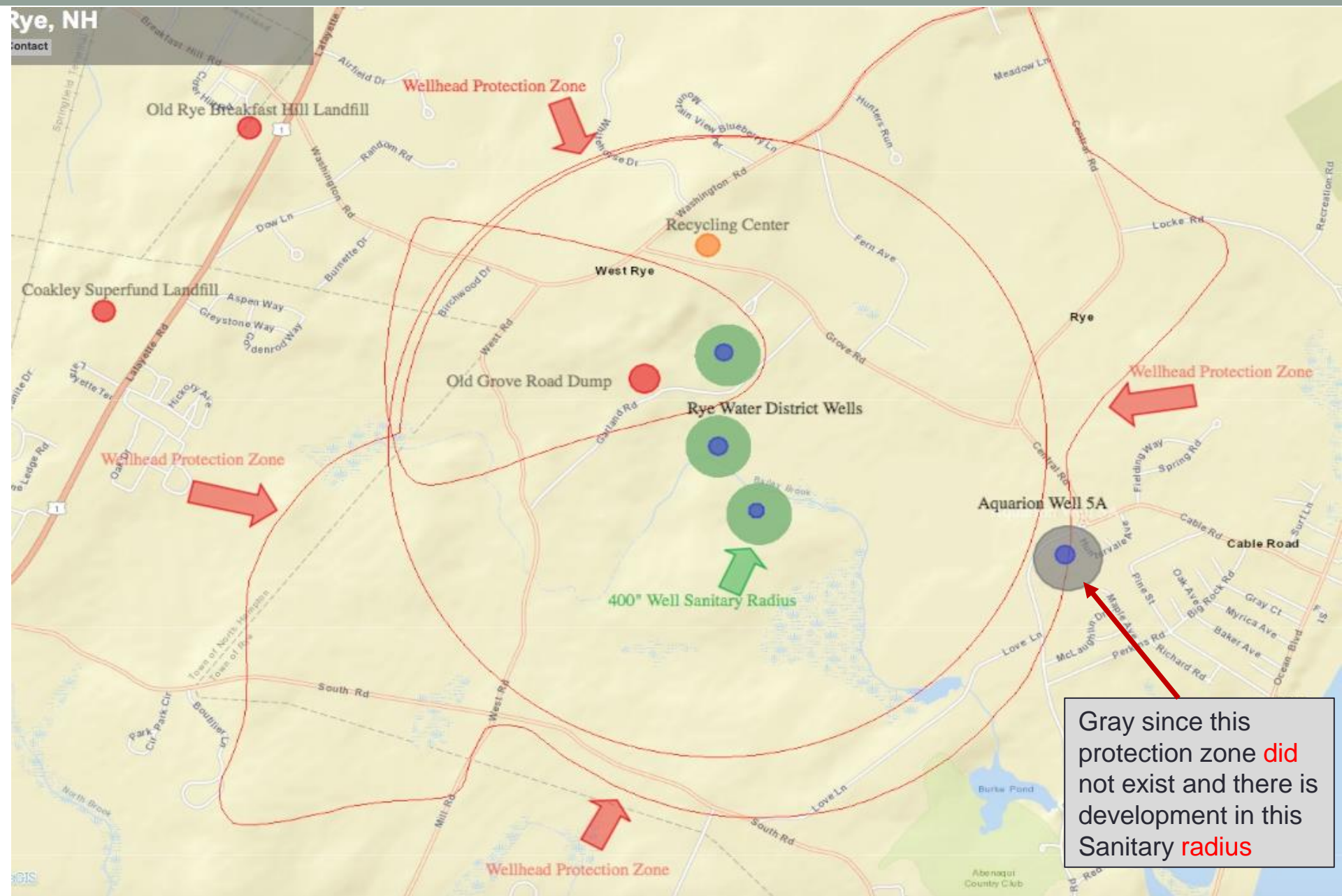
Look at air &  
water together

Reduce your  
exposure as  
much as you can

- Test your air for radon
- Test your water for radon and determine how much it's adding to the air (using 10,000 to 1 ratio)
- Get quotes for treating air and treating water and look at your budget
- Reduce the amount of radon in your air as much as possible, **below 4 pCi/L if you can.**
- Often there will be more exposure from air, and an air treatment system will give you more reduction. But not always, so it's important to test both air and water.

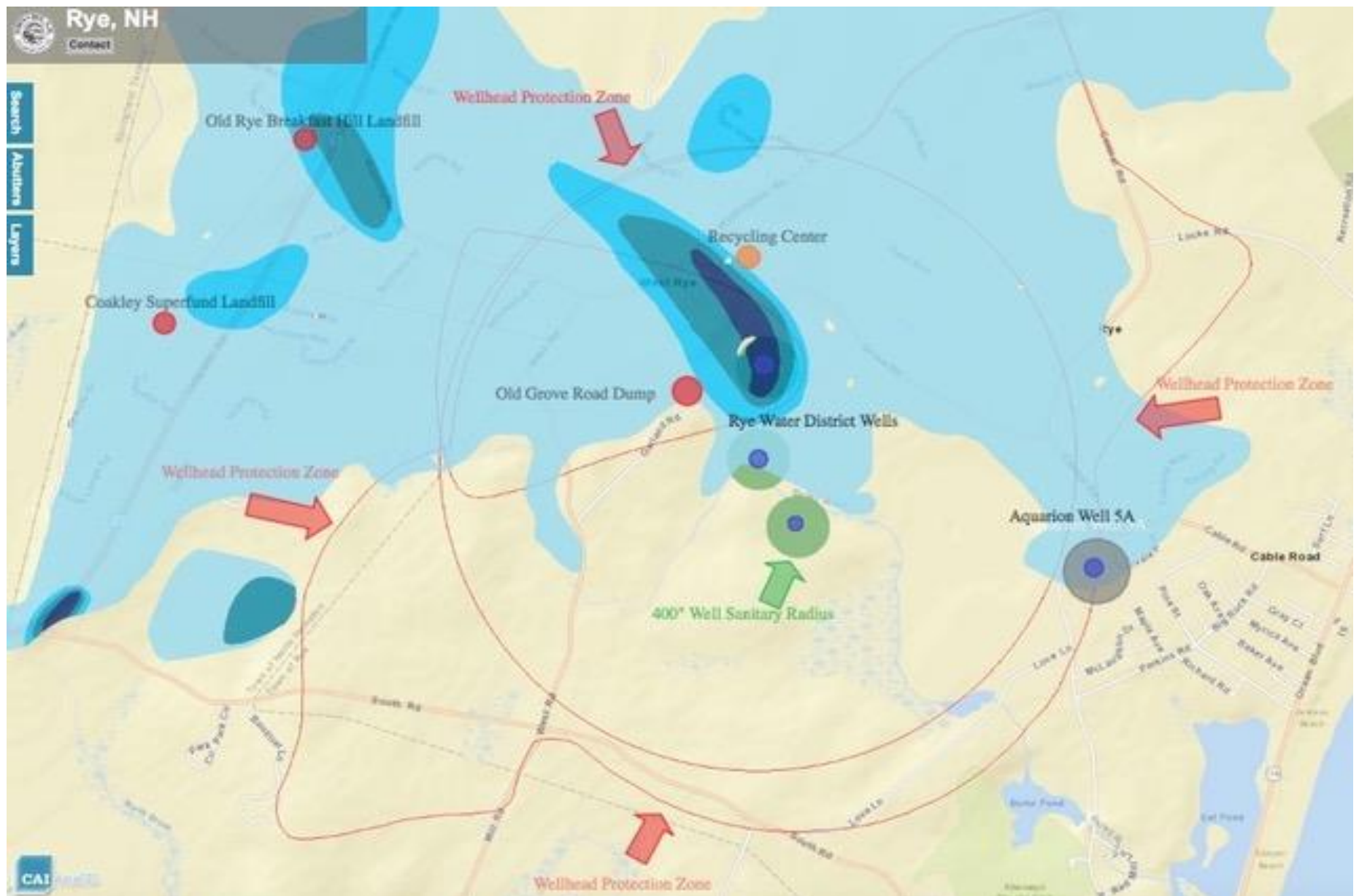




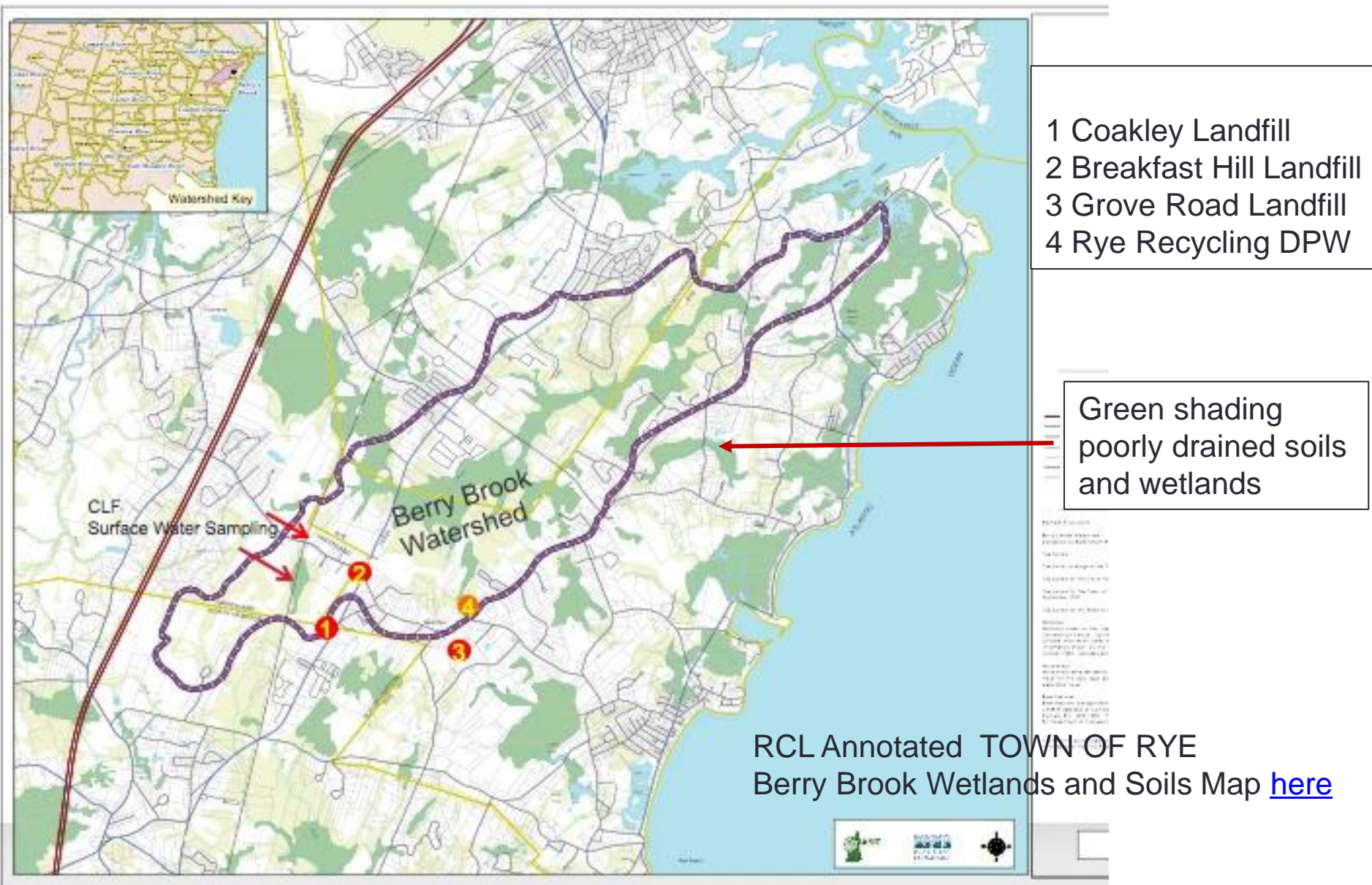


Town of Rye GIS System with annotations Blue = well; Green = Sanitary radius; Red outline – Protection Zone





Berry Brook extends from the Breakfast Hill Coakley Landfills area through Rye to Odiorne Point





## Wisconsin Department of Natural Resources

Where PFAS are found in surface water, the foam associated with the surface water contamination also often contains PFAS at much higher concentrations. It is impossible to determine whether foam contains PFAS just by looking at its color, shape or size. It is also difficult to determine how PFAS concentrations in the water contribute to PFAS concentrations in foam. As some compounds found in water may concentrate in foams, it is possible that surface water with lower concentrations of PFAS can produce foam with higher concentrations of PFAS.

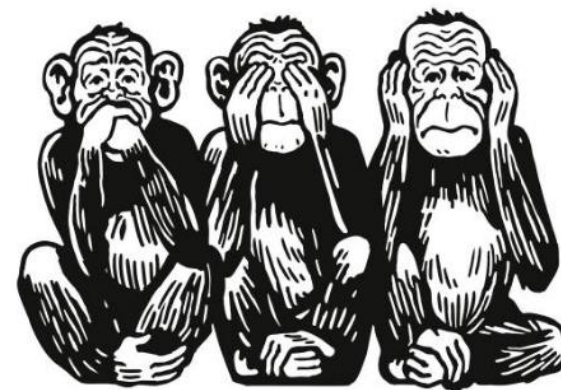
For more information on PFAS and health, visit the [Wisconsin Department of Health Services website](#) [exit DNR].



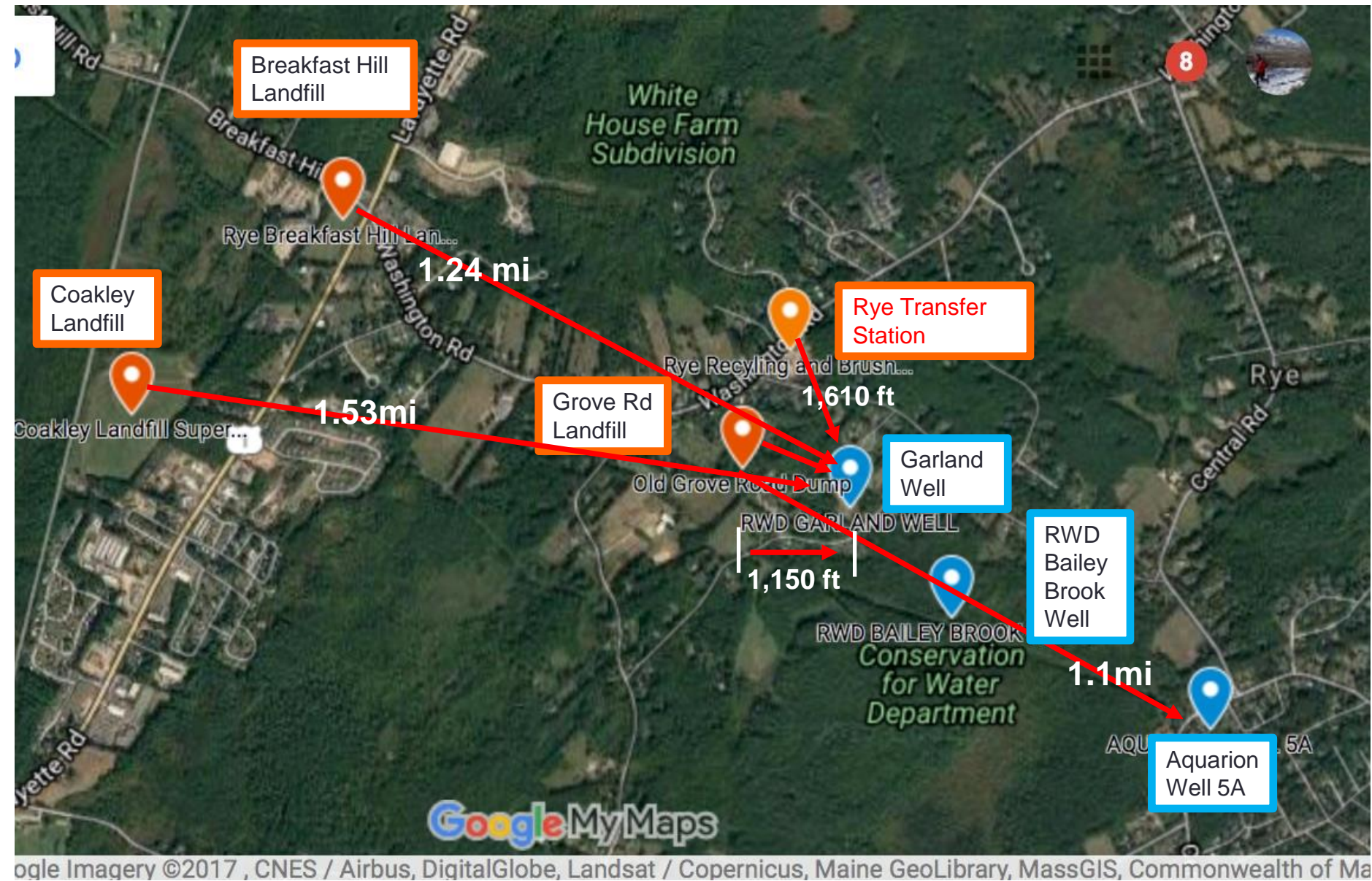
[Web page](#)

## Berry Brook Foam

NH DES told Rye there is no need to test

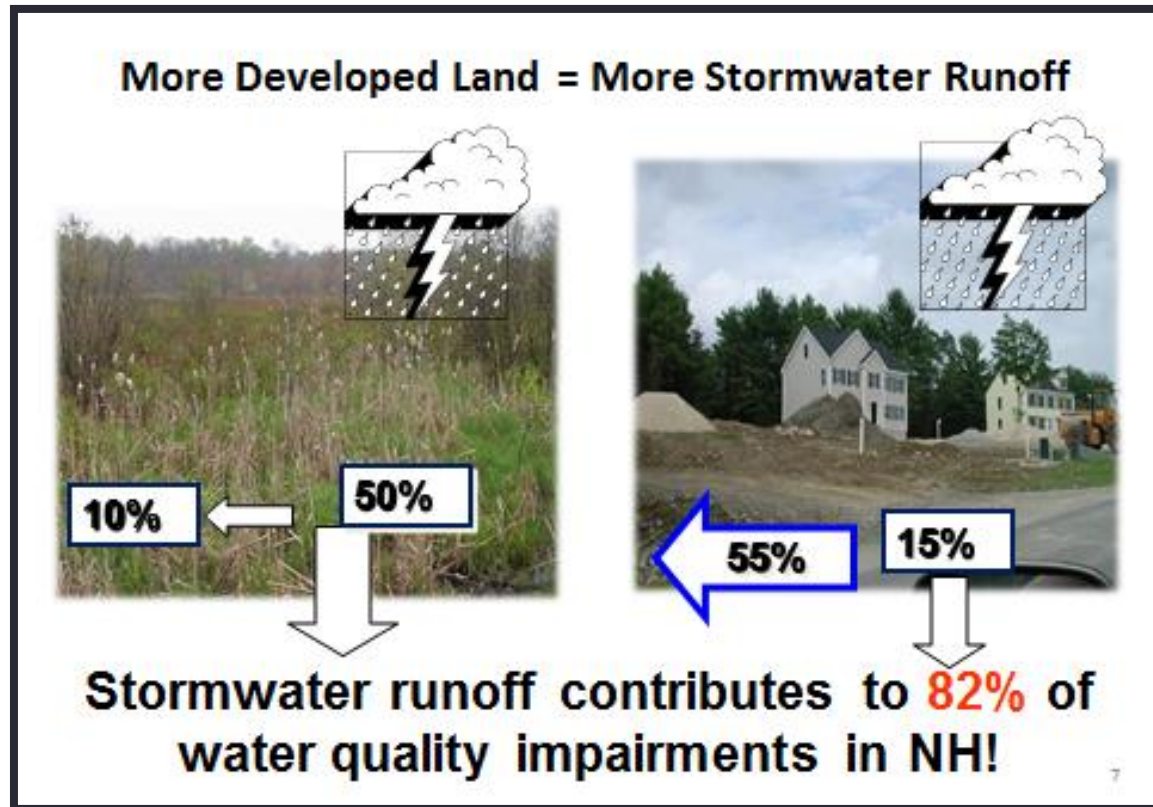


[Michigan Web Page on PFAS Foam in Water ways](#)





From NH DES November 2016 Presentation

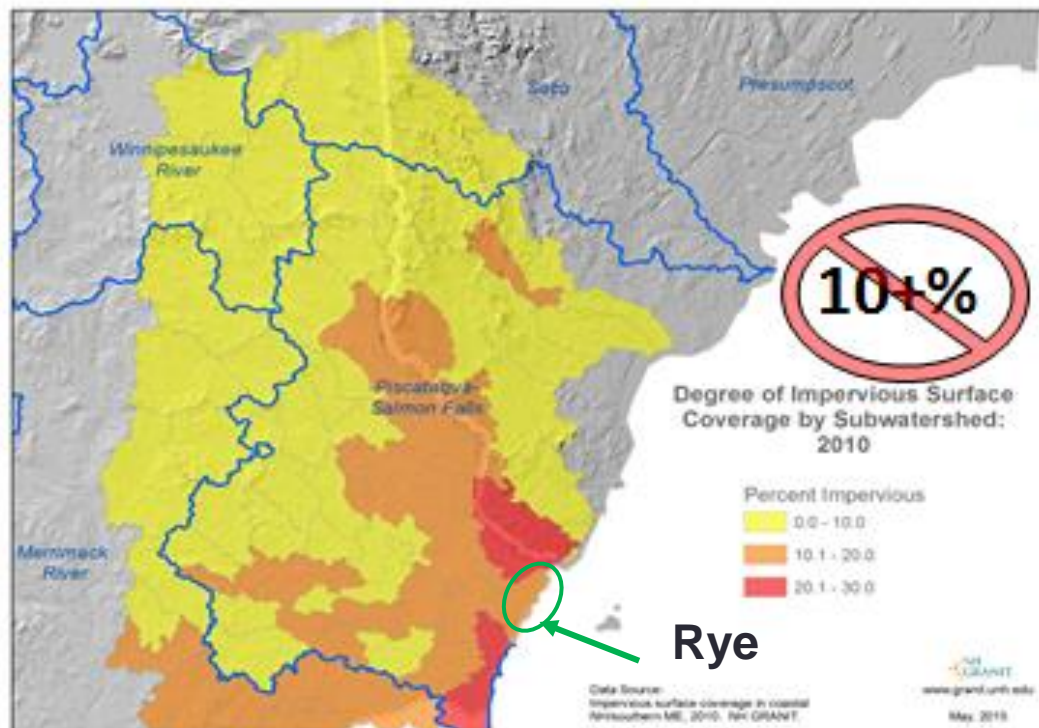


Impervious Surfaces are anything that prevents water flowing straight down into the ground. So paved parking lots, patios, roadways, roofs, etc....

During rain storms and snow melt, water running off of impervious surfaces carries pollutants and sediments into streams, lakes, and estuaries.

To keep waters clean, impervious surfaces should be a low percentage of the total amount of land areas of the watershed basin. **NHDES recommends no more than 10% impervious cover for a town (or watershed). Above this, we see water quality starting to decline!!!!**

## Impervious Surfaces Increase Water Quality Problems



36.7% of Rye is open wetlands or water

As of **2010** Rye **already** had **15.5%** of its land impervious, causing runoff.

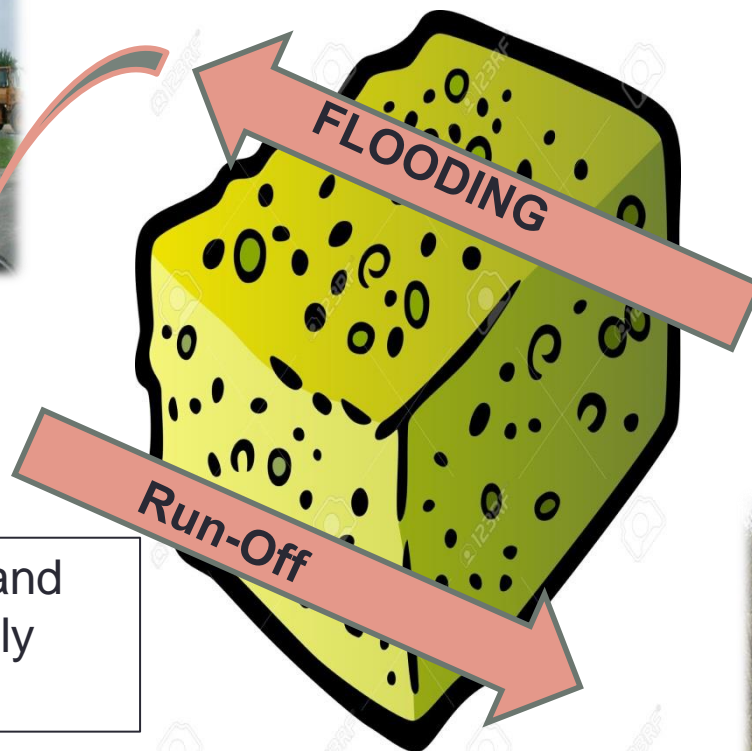
**“severe degradation expected beyond 25% impervious cover”**

Source:

**Property**



**Wetlands Buffer**



Wetlands Buffers protect property from flooding. They also protect leach fields and other non-natural substances from being saturated and pulled back into the wetlands

Wetland Buffers filter and protect the water supply from contamination

**Wetlands**



**Question:** *Do we know the percentage of wetland buffers already compromised (septic systems, buildings, driveways....)? No, we don't!*



## Municipal Separate Storm Sewer System (MS4)

MS4 is a publicly-owned storm drain, pipe, ditch, or other means of collecting and transporting rain water (i.e. stormwater) from a town to an outfall that deposits the water into a stream or river.

MS4 Sate website: [Click Here](#)

Seacoast Stormwater Coalition: [Click Here](#)

Rye Resources: [Click Here](#)

Impaired map Rye [Click Here](#)

Multi-levels that must be met. Adds costs – need to sweep streets twice a year.

Table 2 shows the priority list of the 8 municipal, non-conservation parcels with their NH GIS ID and street address.

*Table 2: Priority municipal, non-conservation parcels ranked by descending IC with NH GIS ID and street address.\*\*\**

Treatment Priority	IC (ac)	NH GIS ID	Street Address
1	2.57	08187-011-134-000	309 Grove Road
2	1.28	08187-012-055-000	20 Central Road
3	1.15	08187-016-007-000	555 Washington Road
4	0.69	08187-012-043-000	575 Washington Road
5	0.51	08187-012-054-000	10 Central Road
6	0.48	08187-012-053-000	0 Washington Road
7	0.14	08187-012-038-000	37 Central Road
8	0.13	08187-012-042-000	581 Washington Road

190-5.7 Stormwater Management Plan in LDR

44 Culverts

850 Catch Basins

22 Outfalls that drain to wetlands

43 Miles of Road





**Summary:**

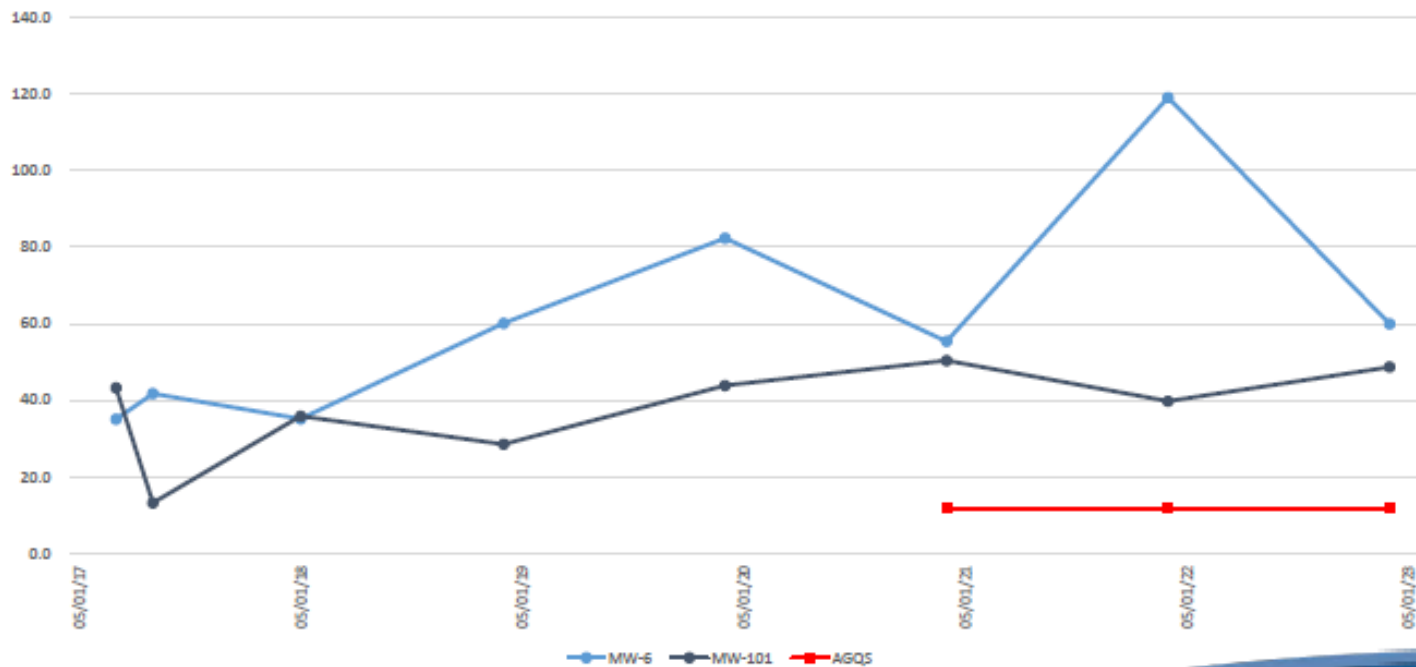
1. A dump is an excavated piece of land used as storage for waste materials while a landfill is also an excavated piece of land for waste storage but it is regulated by the government.
2. A dump is smaller than a landfill.
3. A dump does not have leachate collection and treatment systems while a landfill does.
4. A landfill has a liner at the bottom to catch the liquid produced by solid waste while a dump does not have a liner.
5. Landfills are covered daily with soil to deter pests and prevent bad smells from being released into the air while dumps may be covered or not.
6. After a while, landfills might produce toxic gases which are released into the air and ground because the waste materials cannot rot while dumps are hazards because they can be located anywhere.

- From the 1930's through 1964 Rye operated an open burning dump off of Grove Road pretty much open 24/7
- 1964-1967 a tepee incinerator was used to burn refuse for ALL of Rye.
- 1967-1974 "sanitary" landfill where garbage was covered with soil
- 1974 landfill closed. A major public water supply source which became the Garland Well was identified. Landfill/Dump location purchased by RWD.
- 1990 notification from the state requiring proper closure action
- No action was taken until a "do it yourself" closure was started in 1995 using the highway department.
- 1996 CMA Engineers hired to design a final closure system which was estimated at \$900K due to contaminants from landfill detected in groundwater
- Trash left in place, ground water monitoring wells were installed. Landfill covered with soil cap
- Unclear how much PFAS foam was used to put out the 2012 fire. [Click Here](#) for location.
- PFAS levels ranging from 4 to 155 parts per trillion (ppt) have been detected in the monitoring wells at the Grove Road Dump

August 2023 CMA report: [Click Here](#)

CMA Grove Rd background: [Click Here](#)

PFOA at MW-6 and MW-101 (ng/L)







Located approximately 1650 feet from the Garland Well

Town vehicle gas station on the property

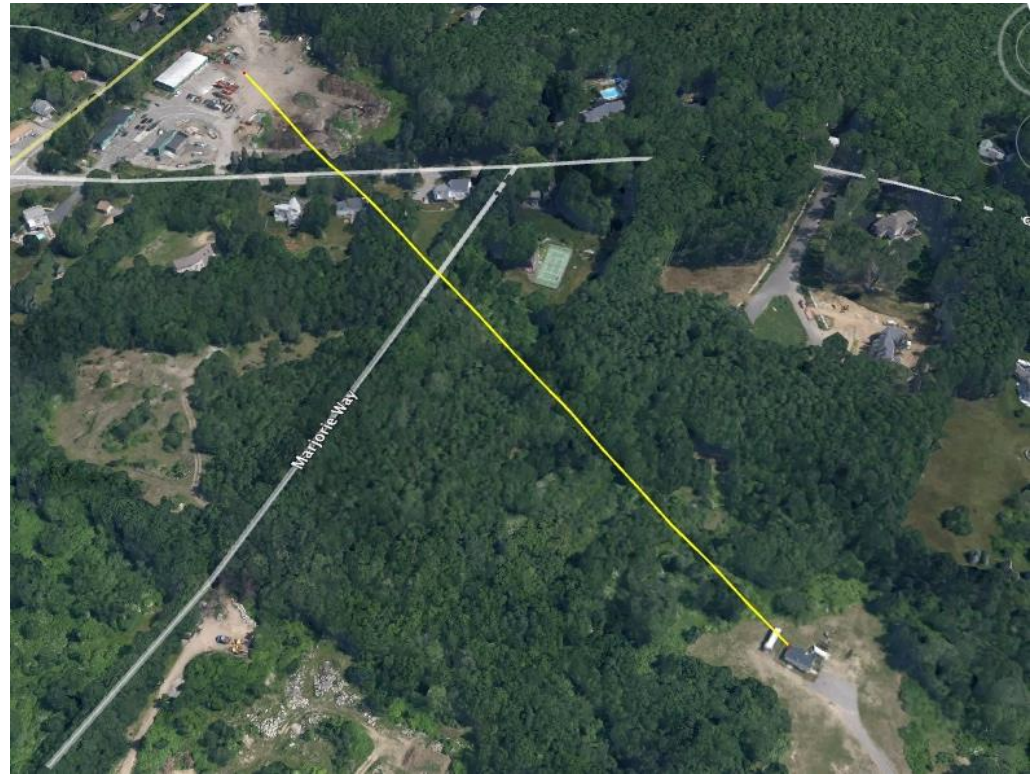
Pesticides and other lawn chemicals from private properties are deposited at the brush dump

Bulk trash bins are not water tight.

Cars at the transfer station: Any leaks run down the pavement to the catch basin

Buildings are in dire need of repair, but redesign and significant repairs are not on the current Capital Improvement Plan

Salt Shed was approximately \$800K



## **Prioritized Improvements**

1. New fueling location on the level with concrete pad (CIP for \$1.4M)
2. Vehicle washing system with recycle/retention of soapy water and dirt/salt



# Transfer Station Fueling Station 40+ years

## PROJECT DESCRIPTION & RATIONALE

The Town's current fuel system was installed in 1985 and, with the exception of the installation of an electronic monitoring system, it has not been upgraded since. In addition, it is located too close to the Transfer Station and has an impact on the traffic flow on the site. Public Works, Police Fire, Recreation, Senior Serve, Code Enforcement and the Water Department all use the current facility. The plan is to relocate the facility to the rear of the site where it would be away from the Transfer Station and its traffic, and upgrade the tanks, secondary containment, fire suppression, and environmental precautions.



Capital Cost:	FY24	FY25	FY26	FY27	FY28	FY29	Total	Proposed Funding Source
Planning/Design/Egging								<input checked="" type="checkbox"/> General Fund (tax rate)
Land/Site Improvement	\$50,000						\$50,000	<input type="checkbox"/> User Fees
Construction	\$1,350,000						\$1,350,000	<input type="checkbox"/> Capital Reserve
Equipment Cost								<input type="checkbox"/> Impact Fee Account
Other Cost								<input type="checkbox"/> Other (Grants, Special Ass'mt)
<b>Total of Capital Costs</b>	<b>\$1,400,000</b>						<b>\$1,400,000</b>	<input type="checkbox"/> Bond
Operating Budget Impa								
<b>Project Totals</b>	<b>\$1,400,000</b>						<b>\$1,400,000</b>	

**Breakfast Hill Road:**

- Landfill for municipal waste opened approximate same time as Coakley Landfill.
- Waste from Rye. Operated by Rye.
- After Coakley was closed documents indicate that Rye received \$350K to take the Pease Waste to Energy Ash along with Jones Road landfill in Portsmouth.
- Groundwater wells have PFAS in them. Two private wells being monitored on Random Road.

PFAS have been detected in several private wells at levels below 70 ppt for PFOA and PFOS.

- Wells near the landfill have ~80 ppt of PFOS and PFOA.

**Next Steps:**

- Excellent Question
- No plans
- Energy Commission would like to put a solar array there

## Coakley Landfill History:

1. Licensed "landfill" between 1971 and 1985.
2. Everything and anything went in the "landfill" between late 1960s and 1982.
3. Between 1982 and 1985 took Pease Waste to Energy Ash – now 50 foot layer of ash on top of waste.
4. "Responsible Parties" means 78 which dumped hazardous waste from off-site locations. Responsible parties are listed [click here](#): The parties include the Air Force and the US Navy (20% combined). The remaining 80%, or Coakley Landfill Group (CLF) is comprised of:
  - a) The city of Portsmouth (54%),
  - b) The town of North Hampton,
  - c) The town of Newington,
  - d) A variety of other private parties.
5. Capped in 1994. NO liner underneath.
6. HB 494



## HB 494

328:2 Remedy.

The general court concurs with the New Hampshire department of environmental services that the migration of contaminants from the site groundwater at the Coakley Landfill superfund site to the headwaters of Berry's Brook is unacceptable and that actions need to be implemented to provide additional removal or containment of the contamination in the surface water bodies that flow through all seacoast towns, including but not limited to Hampton, North Hampton, Rye, Greenland, and Portsmouth, and to public and private drinking water in the towns of Hampton, North Hampton, Rye, and Greenland.

[Click Here](#)

[Deep Bedrock Report](#)

Doing things, but  
NOT getting it cleaned up

### Coakley Landfill Superfund Site North Hampton and Greenland, New Hampshire

DATE	COAKLEY SITE MILESTONES
September 2017	The USEPA issues an addendum to the fourth FYR Report. <i>This addendum updates the Site-wide protectiveness determination in the fourth FYR Report to indicate that, based on available data, current conditions are protective of human health and the environment in the short-term because data indicated no human exposures to COCs at levels exceeding either state or federal standards. The addendum also concludes that long-term uncertainty remains with respect to potential migration of contaminants in deeper portions of bedrock at the Site.</i>
September 2018	AGQS for 1,4-dioxane lowered from 3 ug/L to 0.32 ug/L.
October 2018	GMP renewal application filed with a proposed expansion to the GMZ.
November 2018	CLG installs treatment system at two private wells.
December 2018	CLG submits proposal to expand GMZ.
September 2019	CLG completes a Stormwater Investigation Report confirming that PFAS in shallow groundwater and the adjacent complex is from stormwater runoff and stormwater discharge from the landfill cover system.
November 2019	CLG completes a Deep Bedrock Investigation <i>Interim Report</i> .
2020	AGQS for PFOA, PFOS, PFNA, and PFHxS are lowered.
September 2021	The USEPA issues the fifth FYR Report. <i>This Report concludes that the remedies at OU-1 and OU-2 are protective of human health and the environment and recommends completion of the deep-bedrock investigations to delineate the extent of contamination in bedrock groundwater and fate/transport of PFAS and COCs in groundwater. Report requests the design and implementation of a background study to determine whether concentrations of arsenic and manganese are reflective of background conditions or landfill contamination.</i>
September 2022	CLG completes the Deep Bedrock Investigation <i>Final Report</i> .





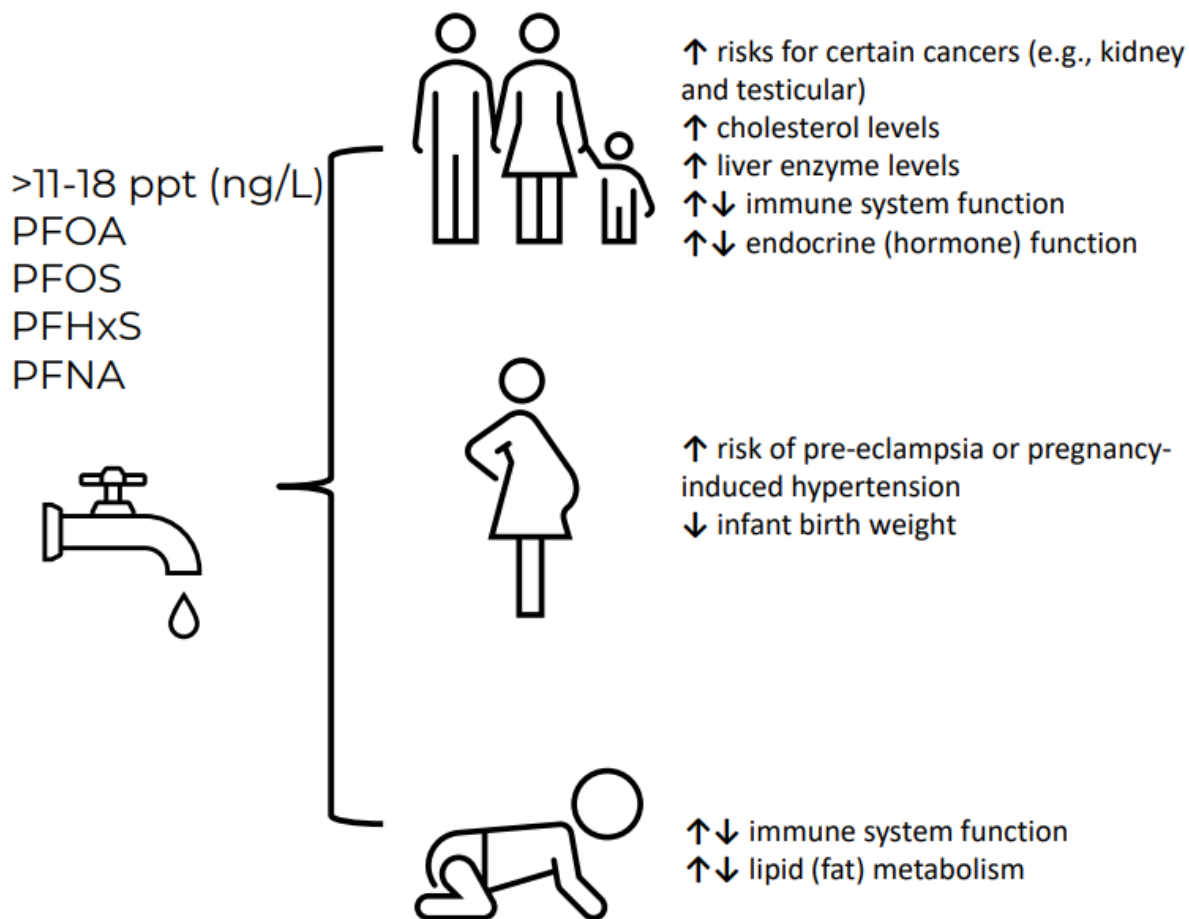
## Safety Concerns

- Survey respondents indicated concerns with the safety of the water, largely related to PFAS compounds, but also Manganese.
- On the following slides, we walk through the current acceptable levels of the various compounds as well as the most recent test results in the Rye Water District.
- The RWD adheres to the required **Maximum Contaminant Levels (MCL)** established by the **NH Department of Environmental Services (NH DES)**, which are generally lower than or equal to those levels established by the U.S. Environmental Protection Agency (EPA).

# PFAS

PFAS stands for per- and polyfluoroalkyl substances.

These are **human-made chemicals** used in a wide variety of commercial and industrial applications.



PROVIDED BY NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES

From RWD Sept 26, 2023

## WHAT IS PFAS?

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PER-AND POLY-FLUOROALKYL SUBSTANCES→1000'S

AKA “**FOREVER CHEMICALS**”–BECAUSE THEY PERSIST IN THE ENVIRONMENT AND BIOACCUMULATE (in people, animals...)

HUMAN-MADE CHEMICALS DEVELOPED IN THE 1940'S BY 3M/DUPONT TO REPEL WATER, GREASE OR STAINS.



From RWD Sept 26, 2023

# WHAT ARE PFAS?

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**TRADEMARKS**—"TEFLON", "SCOTCH GUARD", "STAINMASTER"

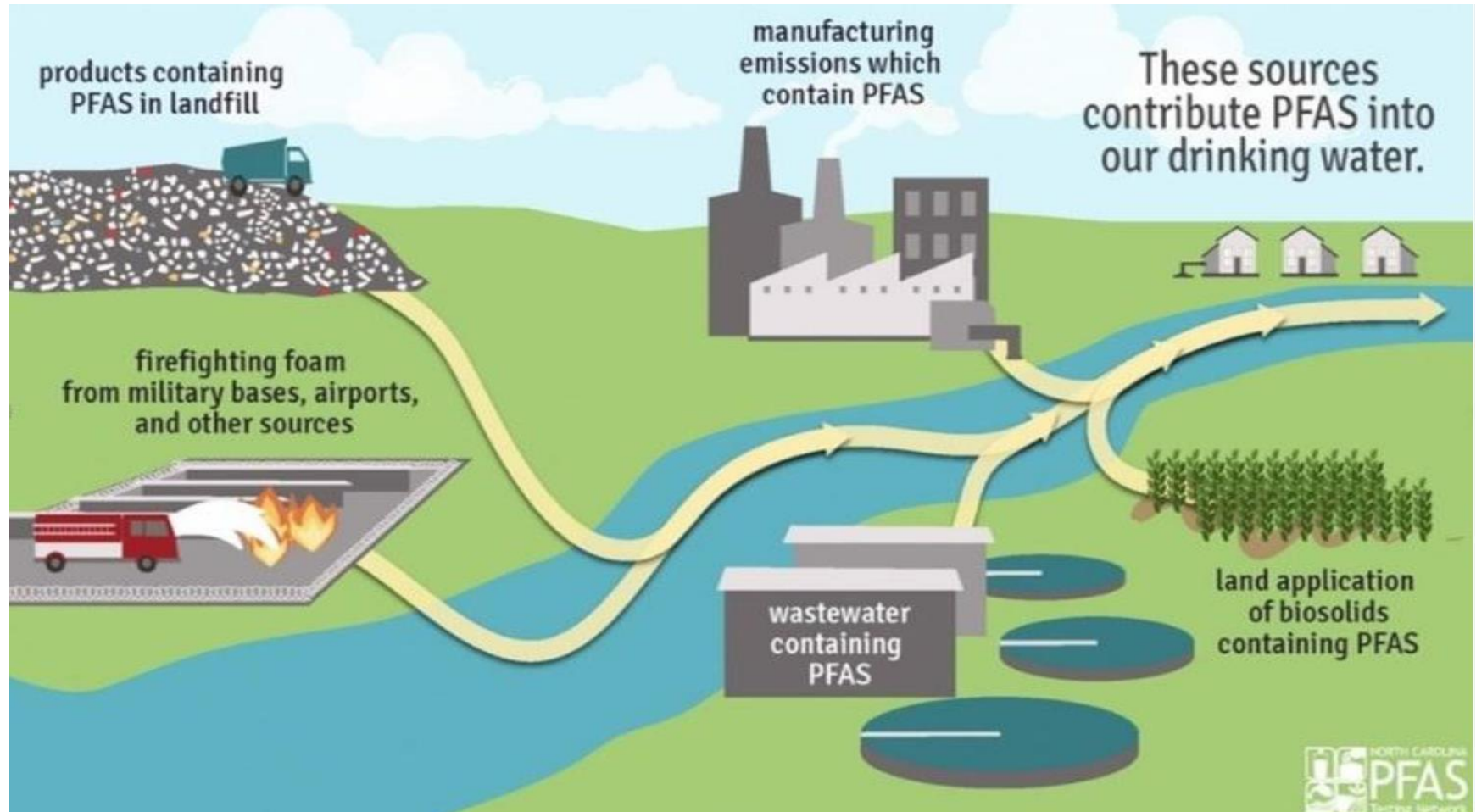
PFAS IS USED IN CARPETS, NON-STICK COOKWARE, CLOTHING, FURNITURE, DENTAL FLOSS, PIZZA BOXES, MICROWAVE POPCORN BAGS, COSMETICS, SKI WAX, FIREFIGHTER FOAM B (AFFF)

THEY ALL CONTAIN **CARBON-FLUORINE BONDS**—ONE OF THE STRONGEST CHEMICAL BONDS IN ORGANIC CHEMISTRY

THESE BONDS DO NOT DEGRADE IN THE ENVIRONMENT



From RWD Sept 26, 2023



From RWD Sept 26, 2023

## Per-and Polyfluoroalkyl Substances

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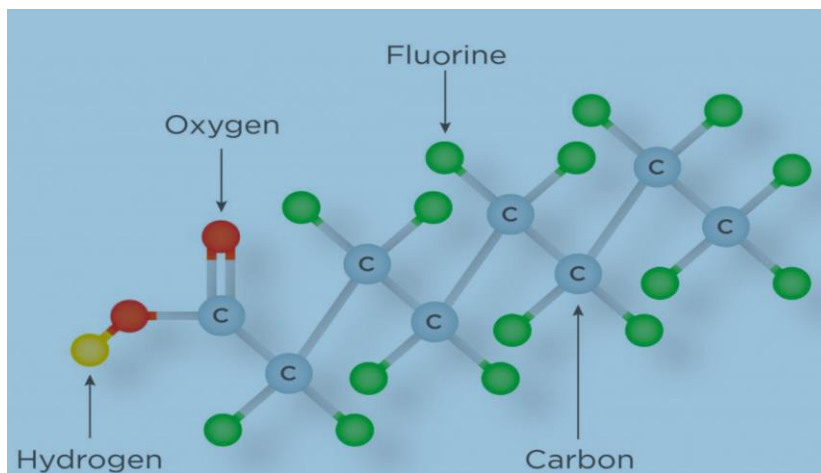
**LINKED TO NEGATIVE EFFECTS ON HUMAN HEALTH**—*Science is evolving and research is ongoing.*

CAN YOU BOIL OUT PFAS FROM THE WATER? **NO, boiling increases the concentration of PFAS (unlike bacteria such as coliform)**

PFAS IS FOUND IN DRINKING WATER THROUGHOUT THE COUNTRY AND THE WORLD. PFAS was also found on MT. EVEREST, in the ARCTIC and in ANTARCTICA

## PFAS/PFOA

- There are well-known and justifiable concerns about levels of Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)
- **Definitions:**
  - **Method Detection Limit:** Is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from the analysis of a sample in a given matrix containing the analyte. (40 CFR Appendix B part 136)
  - **Method Reporting Limit:** Is defined as the lowest amount of an analyte in a sample that can be quantitatively determined with stated, acceptable precision and accuracy under stated analytical conditions (i.e. the lower limit of quantitation).



From RWD Sept 26, 2023

\*

## THE HISTORY OF PFAS STANDARDS

\*EPA's 2016 Advisory was for 70 ppt combined for PFOA and PFOS

No advisories or MCLs were previously set for PFHxS or PFNA

EPA's LHA is an acknowledgement that there is no level of PFAS that is safe.

All levels are in Parts-per-Trillion (ppt)

1ppt is =to 1 drop of H<sub>2</sub>O in 20 Olympic sized swimming pools >>>

Regulation/Advisory	Date	GenX	PFBS	PFHxS	PFNA	PFOA	PFOS
EPA Preliminary Health Advisory	2009					400	200
EPA Lifetime Health Advisory	2016					70*	70*
NH Maximum Contaminant Levels (MCLs)**	2019			18	11	12	15
EPA Lifetime Health Advisory	2022		2,000			0.004	0.02
EPA Proposed Maximum Contaminant Levels (MCLs)	2023	Combined Limit based on Hazard Index numbers				4	4





From RWD Sept 26, 2023

## 2023 RYE WATER DISTRICT PFOS/PFOA DATA

### Commissioner Scott Marion

#### — BLENDED—WHAT YOU ARE GETTING IN YOUR WATER

July      PFOS—4.12 ppt      PFOA—5.42 ppt

UNBLENDED (Garland Well—RWD strongest water producing well)

March      PFOS—5.09 ppt      PFOA—8.03 ppt

June      PFOS—6.36 ppt      PFOA—6.72 ppt

July      PFOS—5.13 ppt      PFOA—6.21ppt

NH MCL   PFOS—15 ppt      PFOA—12 ppt

EPA is proposing 4 ppt PFOS/PFOA (EPA Ruling 2024/MCLs likely 2027)



## System (blended) Results for Various PFAS Compounds

- The results presented in this table were collected during our quarterly sampling over the last two years. Reported as parts per trillion (ppt or ng/L).
- How do these results compare with MCLs?
  - Focusing only on PFOS and PFOA since the others are below detectable levels

<b>Date Sampled</b>	<b>PFOS</b>	<b>PFOA</b>	<b>PFHxS</b>	<b>PFNA</b>
Jan-21	5.04	6.27	ND*	ND
Apr-21	4.35	5.71	ND	ND
Jul-21	3.91	4.61	ND	ND
Oct-21	4.63	4.70	ND	ND
Feb-22	5.92	7.90	ND	ND
Apr-22	4.02	5.74	ND	ND
Aug-22	5.71	6.71	ND	ND
Nov-22	5.23	5.24	ND	ND

ND = Non-Detectable

# Aquarion PFOA

## Proposed EPA PFAS Regulations

Parameter	DES (ppt)	EPA (ppt)
PFOA	12	4
PFOS	15	4
PFBS	-	Combined Hazard Index <1
PFHxS	18	
PFNA	11	
Gen X	-	

Point of Entry	PFOA (ppt)	PFOS (ppt)	Combined
Jenness	4.4	2.7	0.0
Little River Road	3.8	1.3	0.0
Mill Road	4.5	4.0	0.0
Winnicut Road	1.1	0.0	0.0

# AQUARION



2017 PFOA TABLE	Lowest	Highest
25 Private Rye Wells Tested by NHDES	Non Detect	33.7
Old Grove Road Dump Monitoring Well	8.9 4.3	151 88.6
Rye Water District Wells (combined)	14	21
Aquarion Well 5A (Jenness Beach)	4	8.23
Breakfast Hill Rd/Rte. 1 Landfill	9.1	82
Berry's Brook Surface Water		1,250
Berry's Brook Leachate from Coakley		2,586
Aquarion Well 6 Hampton(combined)	12	88
Portsmouth City Wells	Non Detect	14



## Metals in our water

# WATER QUALITY REPORT

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Arsenic, Barium, Radium, Fluoride, Nitrate, Copper (Cu), Lead (Pb), Na, Chloride (Cl), Fe, Mn, Sulfate, Zn, Radon,

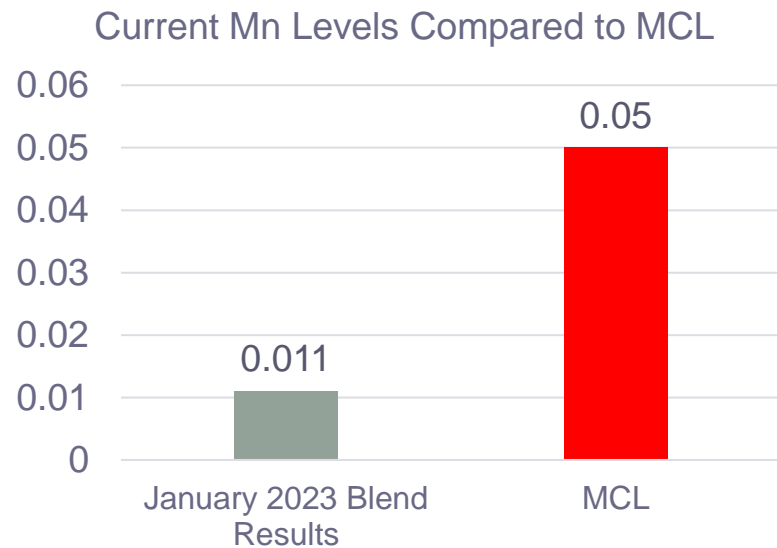
Increased Coliform and E. Coli Sampling (Boil Order 2022)

Since Chlorination, increased Pb, Cu and Free Cl residuals system-wide

Disinfection By-Products

# Manganese Levels

- Secondary MCL = 0.05 mg/L (aesthetics only)
- January 2023 “blend” results = 0.011
- MCL will be 0.3 mg/L in January 2024
- Note: “Blend” is the water you drink—a combination of all sources



Cedar Run Well has the higher Manganese and Iron

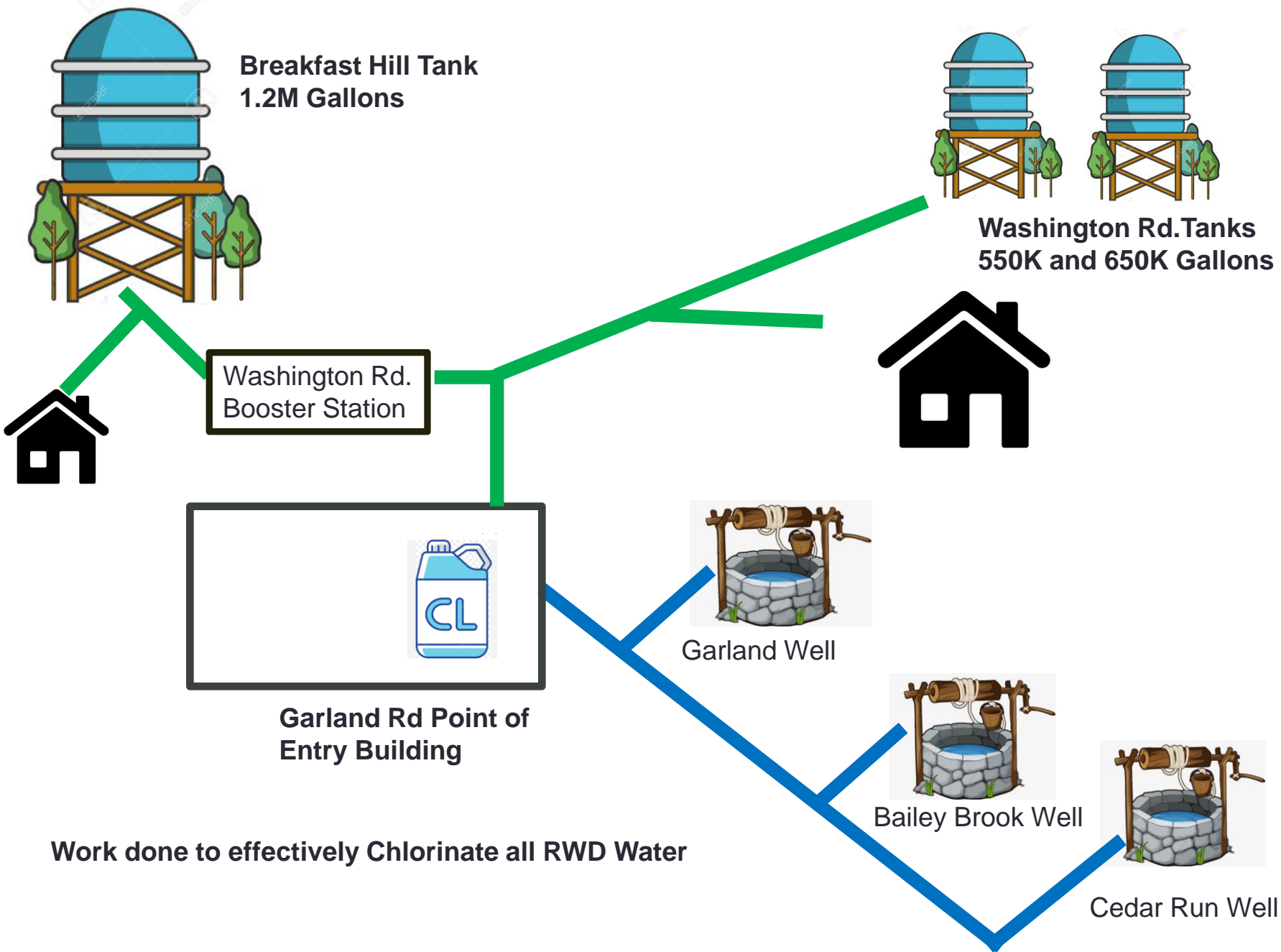
Metals need to be removed before PFAS Treatment

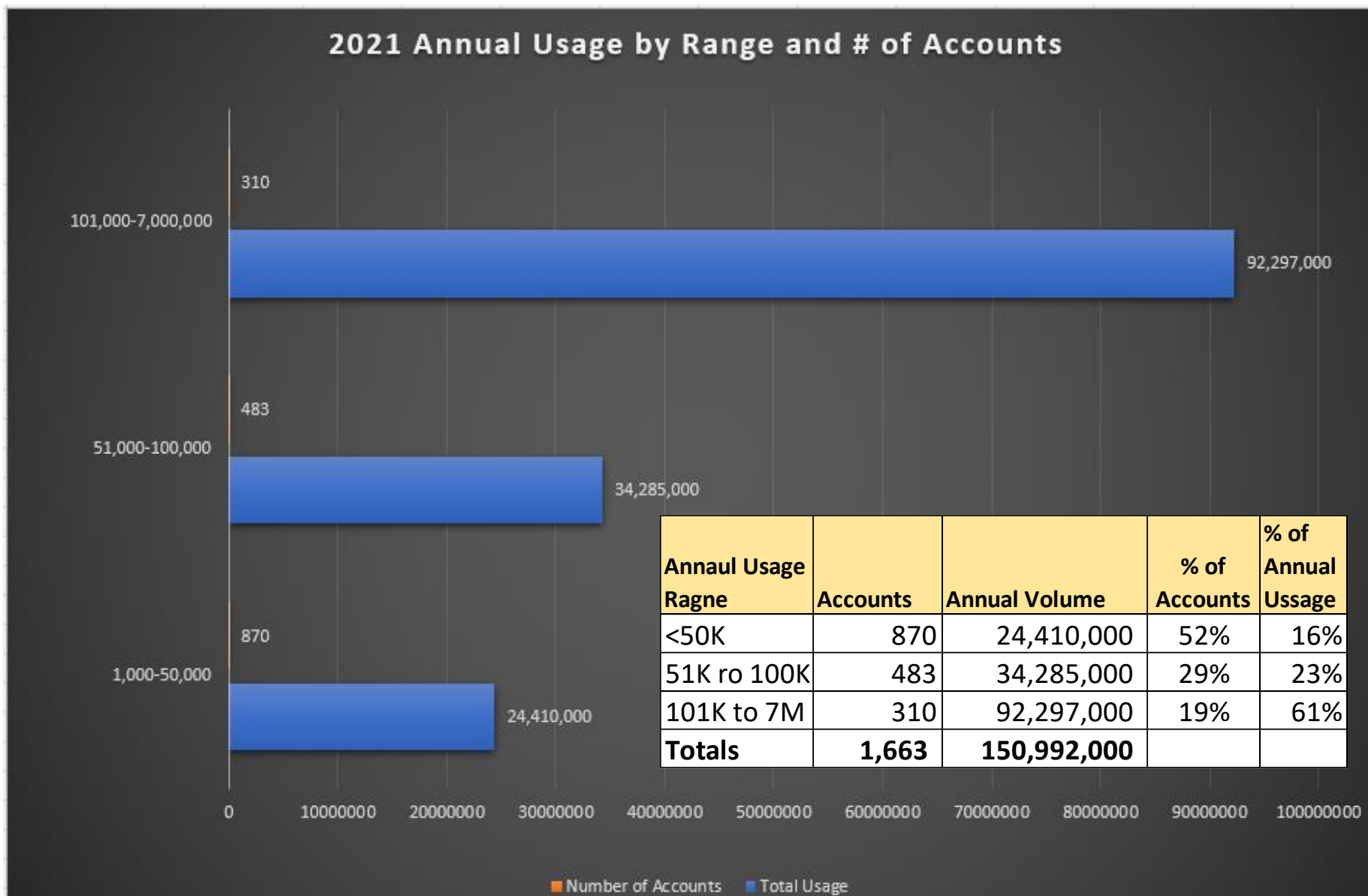
## RWD BOIL WATER Fall 2022

Question	Answer
What happened?	E-Coli got into the RWD system
Do we know the source:	No, the source was never located.
Are we at risk?	No, all RWD water is now chlorinated
How is it Chlorinated?	All three wells now connect at the Garland Well. Water is Chlorinated then to homes
When will chlorination stop?	It won't. There is a process to get it waived, but it is costly and labor intensive.
What about the smell?	Sorry, not going away. RWD is working to lower volume needed



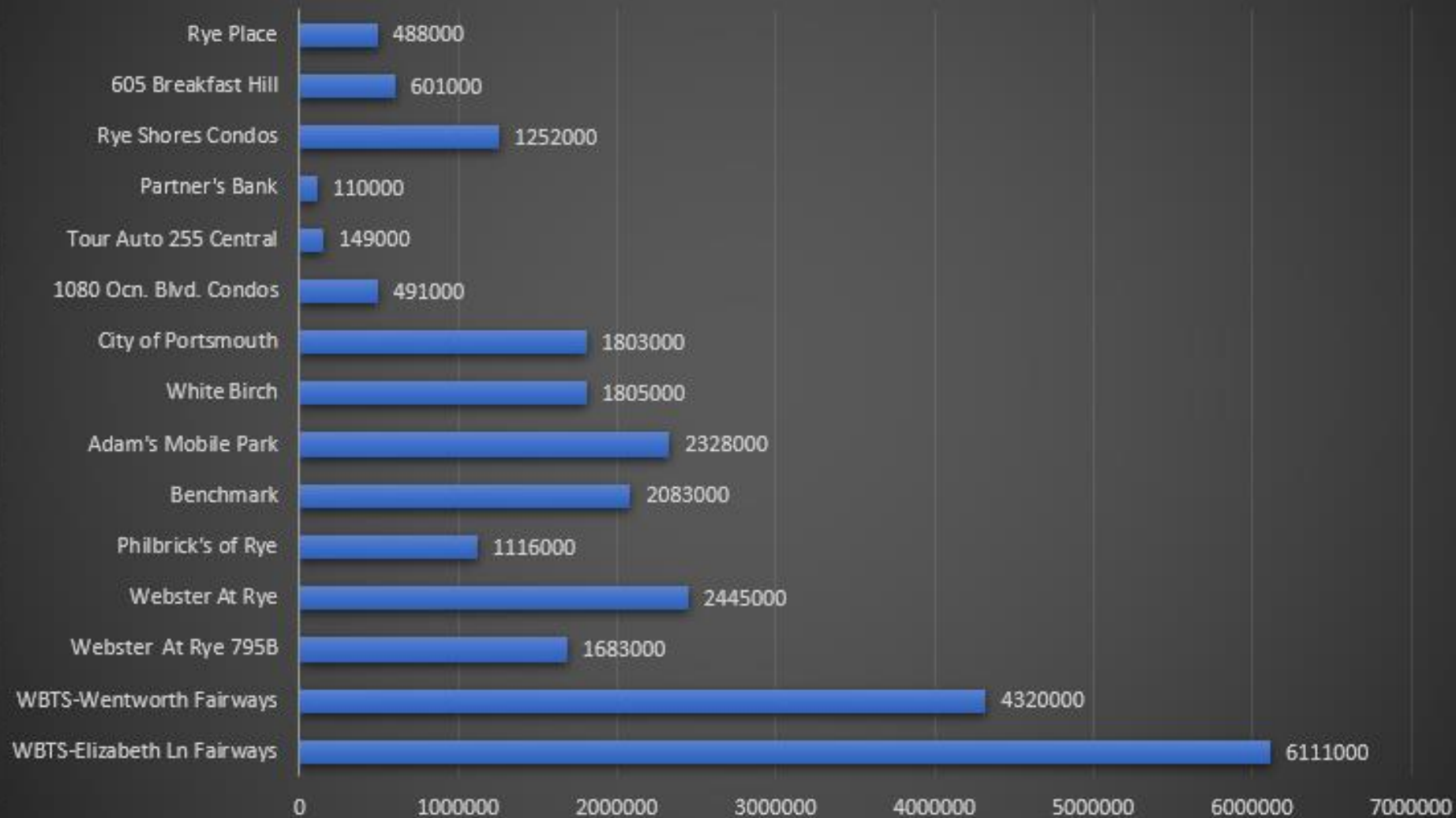




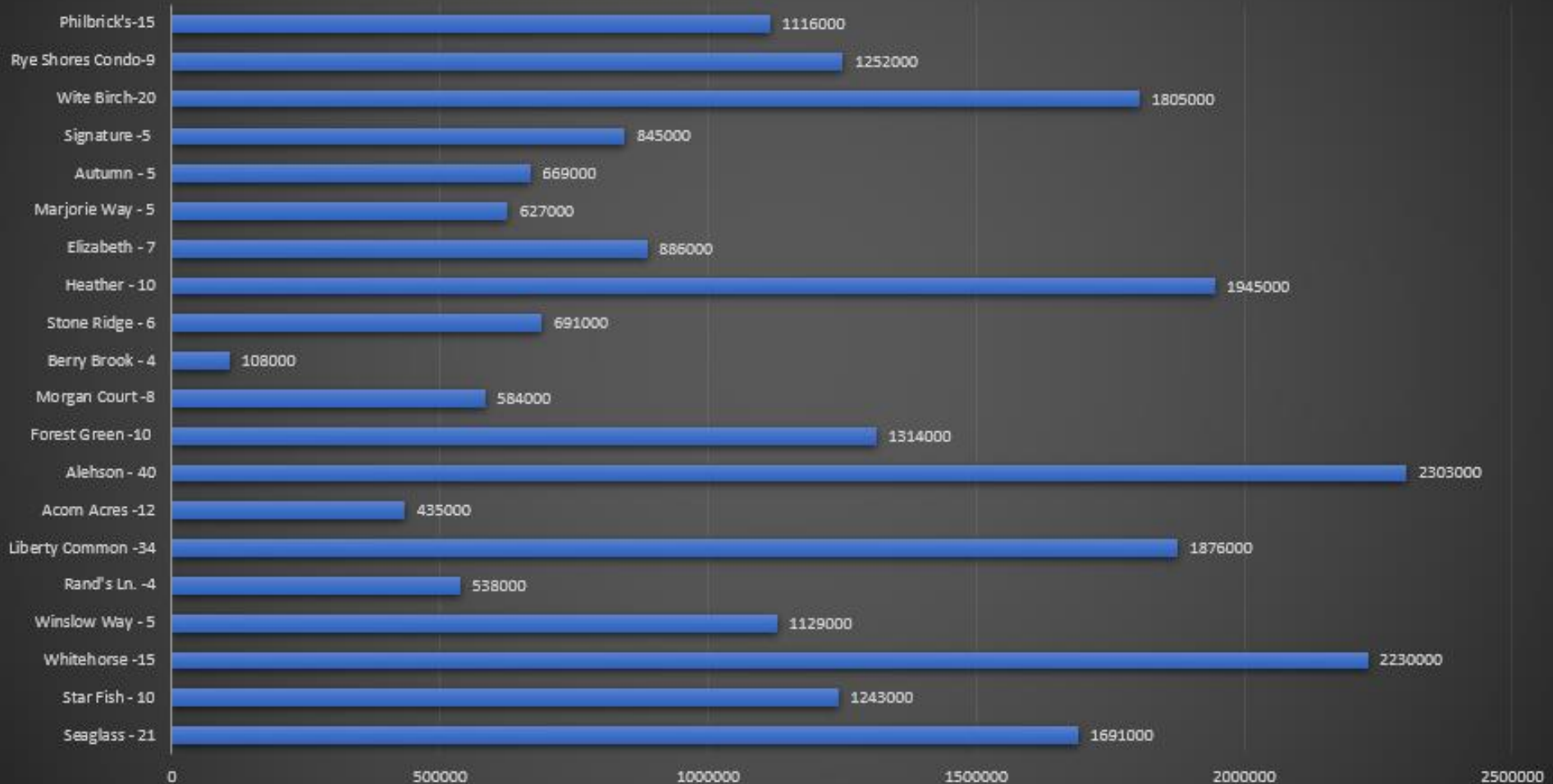


**About 50% use 20% of RWD and the other 50% use about 80%**

## 2021 Commercial High Use



## 2021 Subdivision Annual Usage





# Wells, Plants and Options

## RWD Additional Well

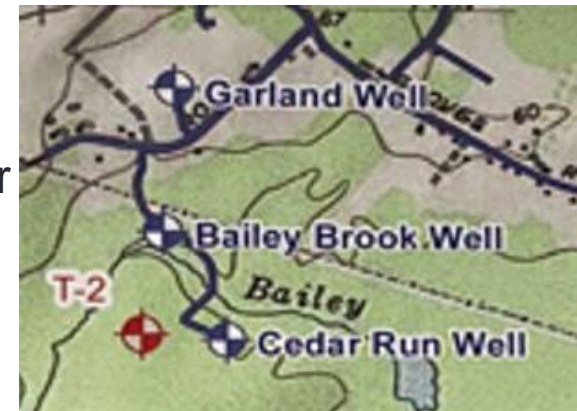
### **RWD would like to have an additional well because:**

- Better water quality (lower iron, manganese and potential lower PFOA)
- Resiliency (all three wells are very close together)
- Redundancy (a single accident could close all three wells).

-

### **Locations tested over the past 10 years:**

- Seaglass Lane/Rand
- RWD Property off of Garland Rd, next to Bailey and Cedar
- RCC property by Cedar Run subdivision
- Property off South Rd.
- RCC property on West Rd.



### **Brown Conservation Land Update:**

- NRCS is reviewing, awaiting final drilling proposal and land restoration
- Funding considering Treatment plant could delay

## RWD Grants

\$50K Strategic Grant – High Pressure Interconnection Water Main

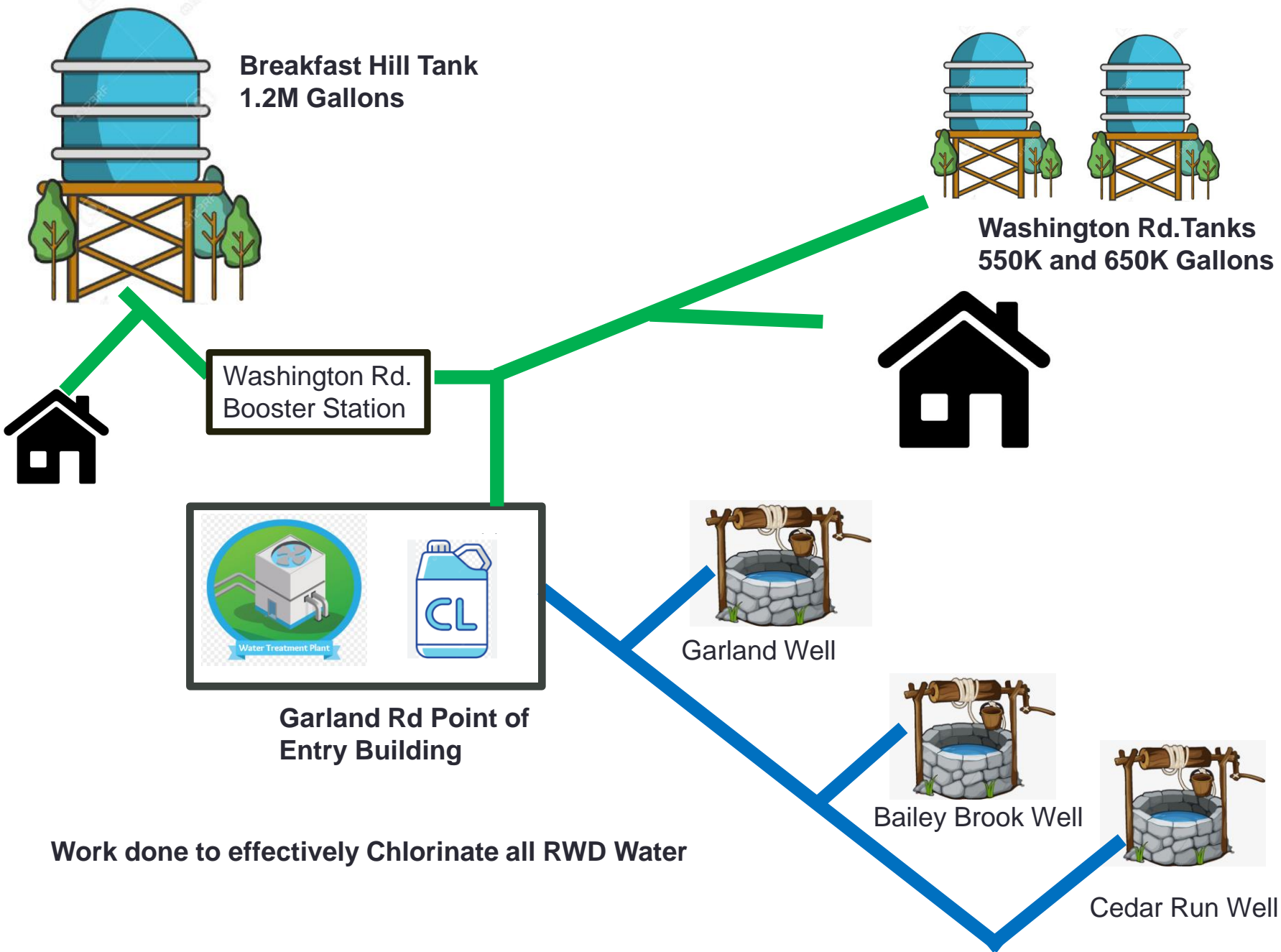
\$50K Water Treatment Plant Pilot

\$40K Lead Service Line Inventory

Issue	Status
E-Coli	RWD currently being treated
Metals	Currently meet requirements, but lower limits would require treatment
PFOA	Currently meet requirements
PFOA	At our home, we have been filtering our water for years. Personal choice

New regulations will require Metals and PFOA treatment

**Rye Community Decision:** Are the current PFOA levels acceptable to the owners of RWD?





From RWD September 26, 2023 Presentation

## CENTRAL TREATMENT PLANT

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How much does it cost? Soft Estimates **\$16-18 Million**  
not including yearly O & M (>\$150K)

**Fe/Mn need to be treated before PFAS treatment**

How long will a Central Treatment Plant take to build?  
3-5 years Supply/Demand

Issue	Status
Long Term Operation & Maintenance	RWD billing Should Town contribute something each year?
Heavy Metal Treatment	Rye Water District
PFAS from Grove Rd	Town of Rye is responsible
PFAS from Coakley	Could take a long time. State wants to manage going after Dupont, 3M, etc....
PFAS from Breakfast Hill	Rye is responsible

Rye has been approved, but needs to apply to get this funding before May 2024:  
\$9M Loan at “0” Interest  
\$2M additional money, \$1M is for metal treatment

Dear Mr. Jones,

The purpose of this letter is to inform you that the [FY 2023 DWSRF Project Priority List](#) has been finalized and that \$11,000,000 in financial assistance is available for the following project(s).

Project Description	Funding Source	Available Funding Amount
CENTRAL WATER TREATMENT FACILITY	DWSRF Loan	\$10,000,000
	Estimated Principal Forgiveness*	10% Forgiveness
	DWSRF Emerging Contaminant (EC)	\$1,000,000 100% Forgiveness

*Please note, the Washington Road Tank Rehabilitation, Garland Road Water Main, and West Road Well Development project(s) are currently on the non-funded portion of the PPL. If funding for these projects becomes available, NHDES will contact you as soon as possible.*

Who creates this Warrant?  
Where does the \$7M “Balance” come from?

- Aquarion has expressed interest to purchase RWD to both RWD and the Select Board
- This is a 100% a RWD decision
- Comparison numbers on water costs may not be correct
- RWD has not communicated that they are interested in investing more in these discussions. Expensive Legal Counsel is needed to understand all of the nuances. Can't just depend on Aquarion.
- Eversource owns Aquarion. Private Equity is a large owner
- Eversource 2023 Financials show Aquarion generated \$46.7M in Net Income [Click Here](#)

# Aquarion 2001 Purchase of Hampton Water Works and two other properties. [article](#)

## NEWS

### Hampton Water Works sold

Steve Jusseaume

Published 2:00 a.m. ET Aug. 31, 2001 | Updated 9:37 a.m. ET Dec. 16, 2010

[View Comments](#)



HAMPTON — American Water Works, which owns Hampton Water Works Co., in conjunction with the Kelda Group and its subsidiary, Aquarion, announced Thursday that five subsidiaries of American Water Works have been purchased by Aquarion.

The water companies affected by the deal are in Connecticut, Massachusetts, New York and New Hampshire.

The transaction price is about \$118 million in cash plus the assumption of \$115 million in debt. The acquisition will be funded from existing cash resources and debt facilities with the Kelda Group.

In addition to HWWC, the American Water Works Company's Salisbury, Mass., operation will change ownership.

**\$118 M Purchase Price**

**Assumes \$115 M Debt**

Regulatory Hearing [Click Here](#)  
Approval Document [Click Here](#)



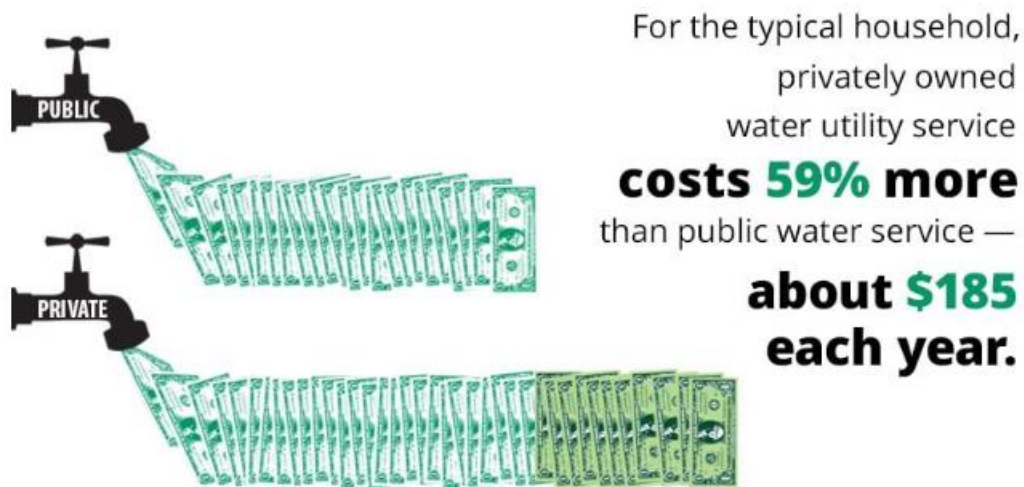
## Literature tends to lean against allowing water privatization

15 Key pros and costs of Water privatization: [Click Here](#)

Water Privatization: Facts & Figures: [Click Here](#)

PDF article [Click Here](#)

### Water Rate Increases



Questions	Responses
Can we get water from Portsmouth?	Rye would first need to convert all equipment to match Portsmouth (what New Castle has done). However, Portsmouth is not interested a Rye uses large volumes for irrigation.
What if there is an emergency?	In a crisis, water could temporarily come from Aquarion or Portsmouth to fill Rye water tanks
Has Rye outgrown RWD?	Excellent Question?
RWD, DPW, Sewer, Cemetery... Can all of these be combined?	Yes, but the Select Board did not respond to the RWD question about merging activities.
Should I be filtering my water?	Steven Borne, the RCL President, has filtered the home water for year and his personal recommendation, not an official RCL recommendation, is that everyone should

# Appendix

Is a more detailed comparison of how the different systems are prices possible?

Yes.

RCL just has not had the time to do this?



Usage included in annual charge is 50,000 gallons (see table 4 for overage fees)

Service Meter Size	RWD Supplied	Portsmouth Supplied
5/8	133.00	255.00
3/4	163.00	285.00
1	194.00	326.00
1-1/4	230.00	362.00
1-1/2	270.00	403.00
2	393.00	525.00
3	790.00	923.00
4	1,586.00	1,719.00

After annual allotment

Overage (gallons)	RWD Supplied
for the next 50,000 used	3.50
for the next 100,000 used	4.05
for the next 300,000 used	5.20
above 300,000 used	6.40

Overage (gallons)	Portsmouth Supplied
For the next 150,000 used	5.80
Above 200,000 used	6.40

RWD is run by Town Meeting by those who live in the Water District. So, not managed by the “Town”. Monthly meetings are the first Wednesday of the month 9:00am 60 Sagamore Rd.

## Your Water Bill:

You are billed in two parts for RWD, usage (a base annual service fee) and a tax.

Annual Service fee for first 50,000 gallons of water. Most homes average 4,167 gallons per month.

Larger meter allows for more water usage without a drop in water pressure. You pay more for that.

Overage fees are for 1,000 gallons of water, a RWD Unit of water. Note the standard is 748 gallons or 100 cubic feet. Increasing cost by water units.

Also taxed at a rate of \$0.54 per \$1,000. So if your house is assessed at \$500,000 that would be \$270 per year to RWD, plus your usage bill.

Water is billed at:

\$5.861 per 100 Cubic feet (748 gallons)

Annual Service charge based on meter  
(see table)

[Click](#) Here for full document:.

2022 Water Quality Report: [Click Here](#)

Aquarion PCF Water Testing Data [Click Here](#)

<u>Size of Meter</u>	<u>Per Day*</u>	<u>Per Month</u>
5/8 inch	\$ 0.60	\$ 18.25
3/4 inch	\$ 0.83	\$ 25.37
1 inch	\$ 1.30	\$ 39.62
1 1/2 inch	\$ 2.47	\$ 75.24
2 inch	\$ 3.88	\$ 117.98
3 inch	\$ 9.00	\$ 273.75
4 inch	\$ 15.00	\$ 456.25
6 inch	\$ 30.00	\$ 912.50
8 inch	\$ 48.00	\$ 1,460.00
10 inch	\$ 69.00	\$ 2,098.75





NH 1899 Session Law granted Portsmouth the authority to supply Newington, Greenland, New Castle and parts of Rye with water services.

79 Rye homes directly served by Portsmouth Water . They pay \$4.17/unit (748 gallons) for the first 10 units of use in a monthly billing cycle (7,480 gallons) and \$5.00/unit for anything over that.

Portsmouth sells (wholesales) water to the Rye Water District

Nov. to Mar. Usage: 6,000 gallons per day  
Summer usage : **300,000 gallons per day**

Wholesale rates were flat for 27 years and recently went up. Current wholesale rate is \$3.35 per unit (1 unit = 748 gallons of water).

Annual RWD fees for Portsmouth water are higher **but there is no tax assessment**. Overage rate is higher and there is less water per billing unit.

Cap colors are different on Portsmouth Fire Hydrants – they follow this standard

Blue : >1500 gallons per minute  
Green: 1000 to 1499 gallons per minute  
Orange: 500 to 999 gallons per minute  
Red : <499 gallons per minute



Portsmouth Supplied Users Annual Charge	
Service Meter Size (inches)	Annual Charge
5/8	\$250.00
3/4	\$280.00
1	\$320.00
1-1/4	\$355.00
1-1/2	\$395.00
2	\$515.00
3	\$905.00
4	\$1,685.00

Portsmouth Supplied Users Overage Rate Overage Structure	
Usage (gallons)	Overage Rate
50,001-150,000	\$5.00
150,001-999,999,999	\$5.50



## This Rye Civic League

The Rye Civic League publishes the monthly Rye Civic News. You can add yourself to the Rye Civic News distribution e-mail list at [www.ryecivicleague.org](http://www.ryecivicleague.org)

The Rye Civic League consists of Rye residents who volunteer our time. Please feel free to get involved and help residents be educated and informed.