SWAG Meeting

September 16, 2026 | 6:30-8:30pm

Hybrid Meeting: Portsmouth City Hall Conference Rm A and Zoom

Agenda

1. **Welcome, Introduction & Approval** of June 17, 2026 meeting minutes – Andrea Amico, SWAG co-chair
2. **Quarterly Water Supply Update** – Al Pratt, Water Resource Manager & SWAG co-chair
3. **PFAS Update** - Al Pratt
4. **Cybersecurity and Regulatory Update** – Brandon Kernen, Administrator of NHDES DWGB
5. **Cyanobacteria Presentation** – Elizabeth Crafton, PhD, Senior Principal Scientist, Hazen
6. **Water Division Staffing Study Report** – Al Pratt
7. **Legislative Update** - NH State Rep David Meuse
8. **Community Education Update** - Kim McNamara, Portsmouth Health Officer
9. **Public Comment**

Water Supply Update

1) Drought Status
2) Supply Conditions
3) Water Demand
4) Compliance Update
5) Project Update

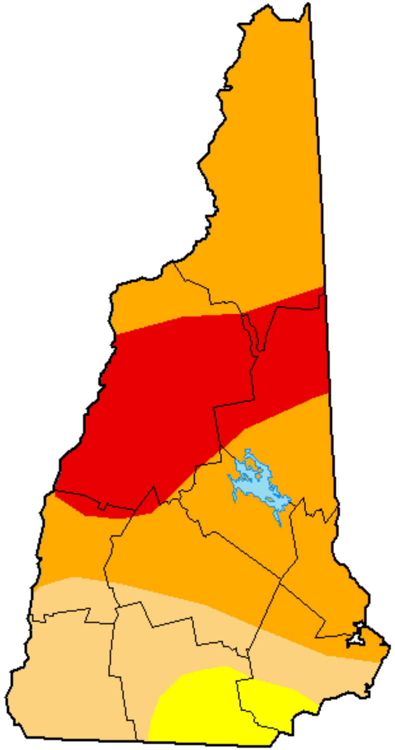
U.S. Drought Monitor

New Hampshire

September 16, 2025

(Released Thursday, Sep. 18, 2025)

Valid 8 a.m. EDT



Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

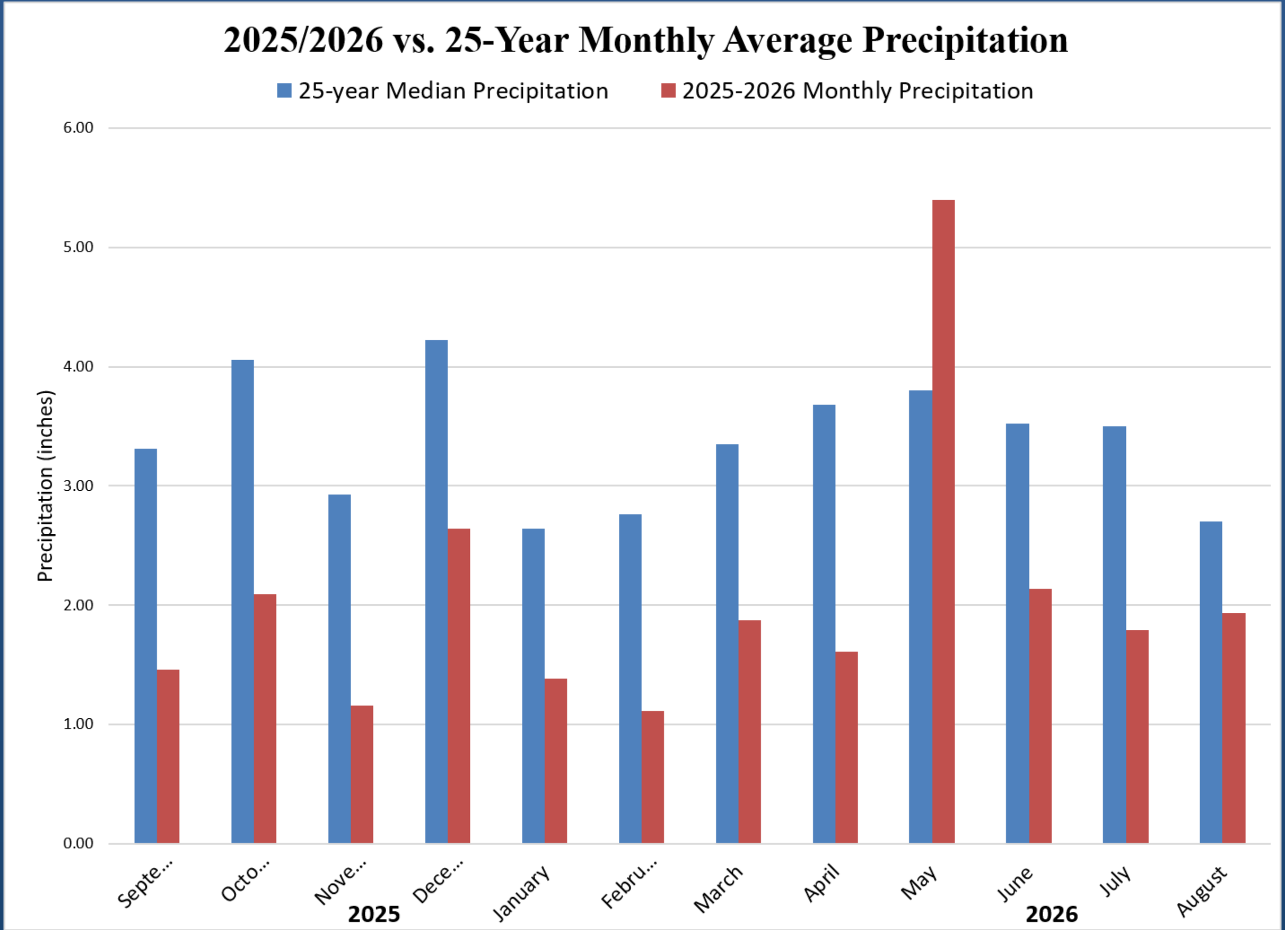
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

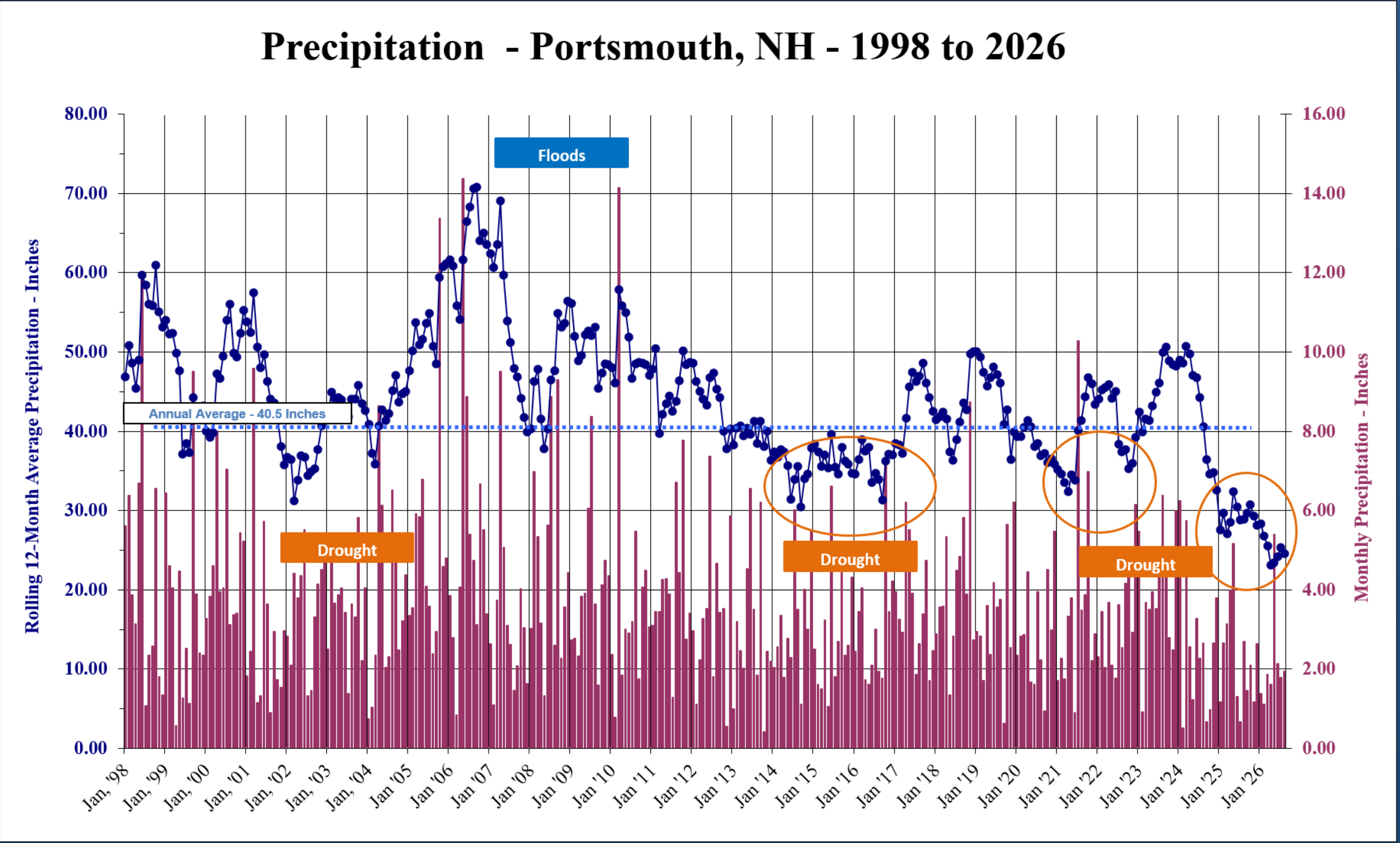
Author:

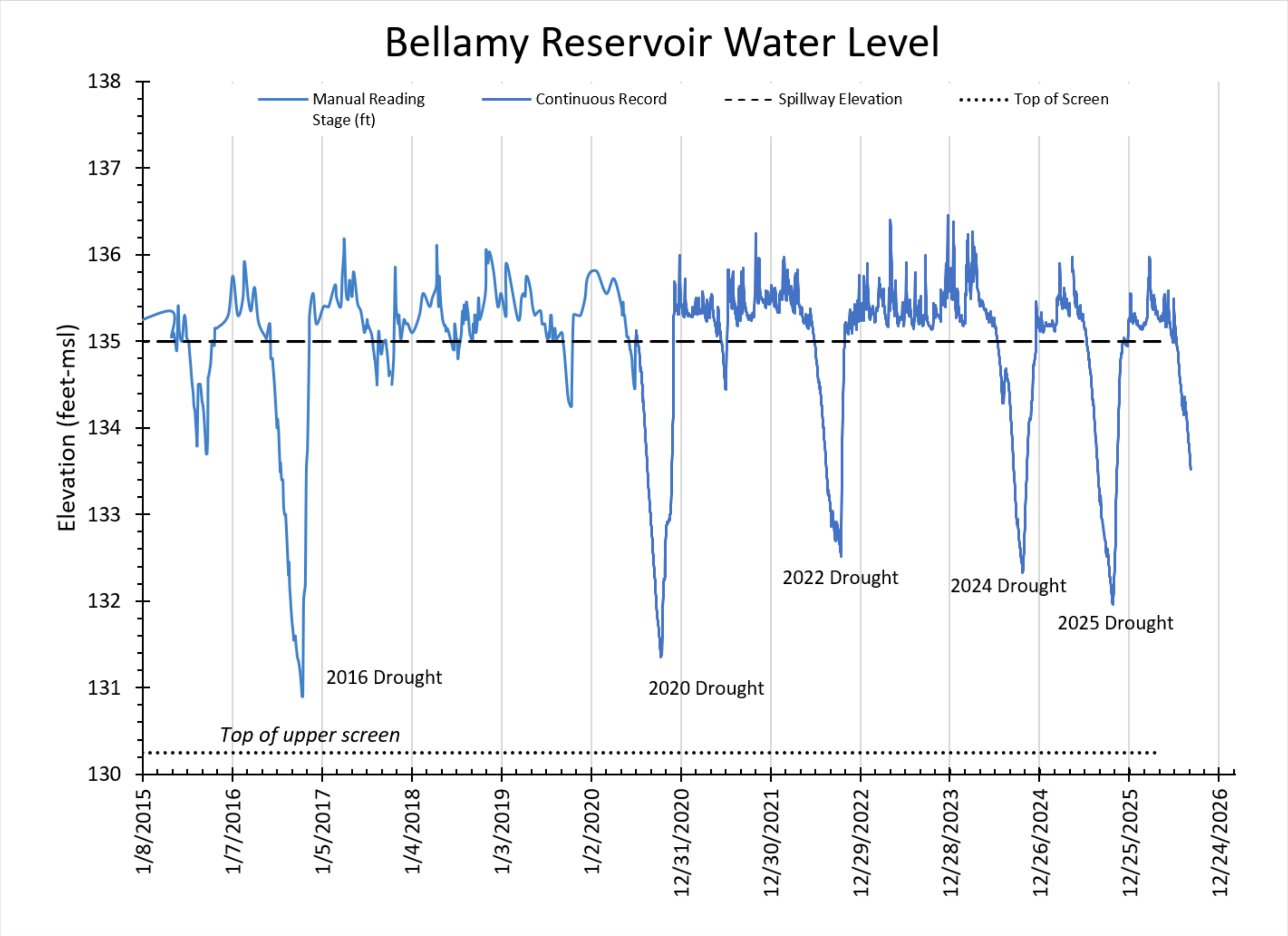
Adam Allgood
NOAA/NWS/NCEP/CPC

droughtmonitor.unl.edu

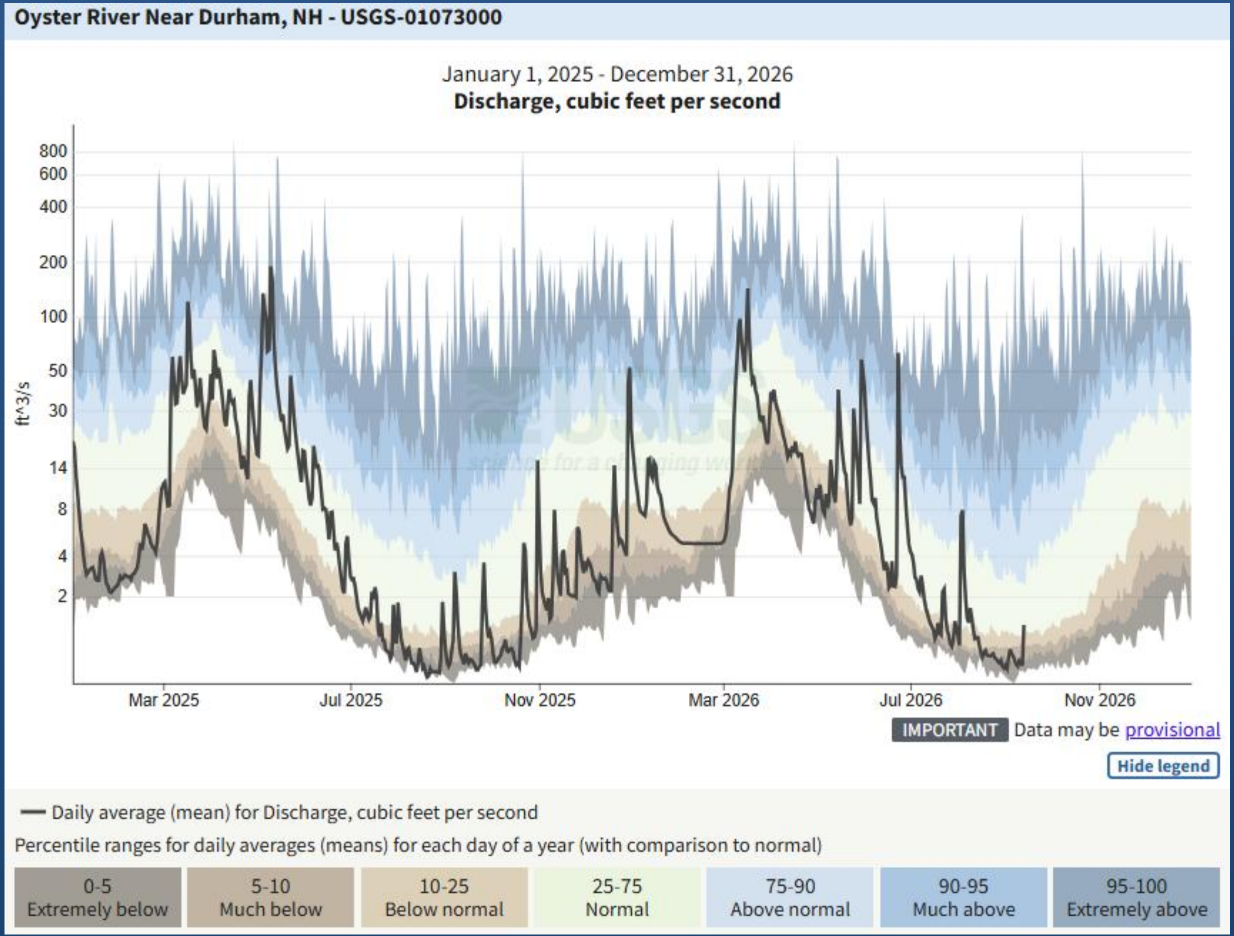
Precipitation – 39% Below Normal Annual Average

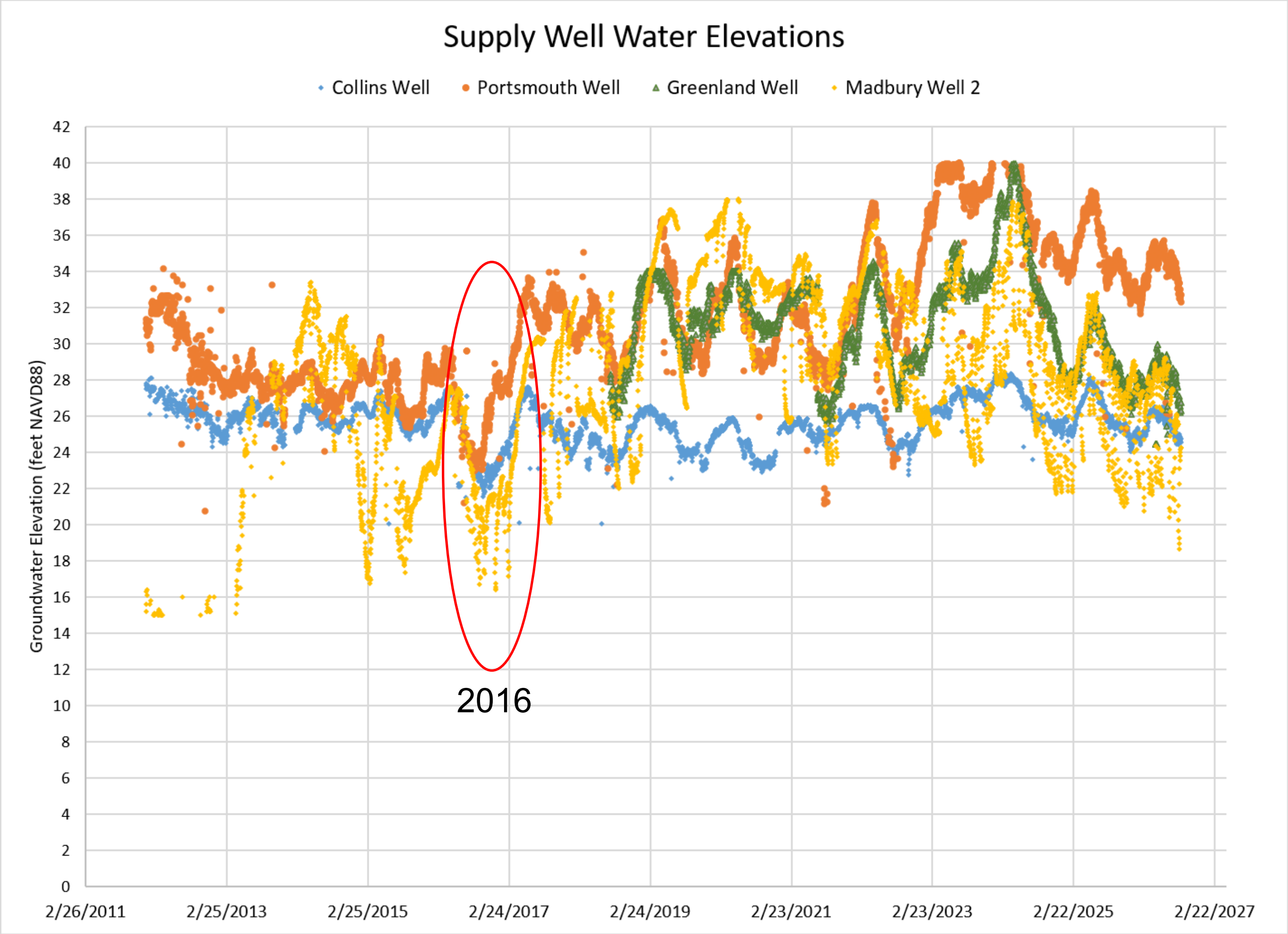



Precipitation - Portsmouth, NH - 1998 to 2026
Floods
Annual Average - 40.5 Inches
Drought
Drought
Drought
Rolling 12-Month Average Precipitation - Inches
Monthly Precipitation - Inches
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
16.00
Jan, '98
Jan, '99
Jan, '00
Jan, '01
Jan, '02
Jan, '03
Jan, '04
Jan '05
Jan '06
Jan '07
Jan '08
Jan '09
Jan '10
Jan '11
Jan '12
Jan '13
Jan '14
Jan '15
Jan '16
Jan '17
Jan '18
Jan '19
Jan '20
Jan '21
Jan '22
Jan '23
Jan '24
Jan '25
Jan '26

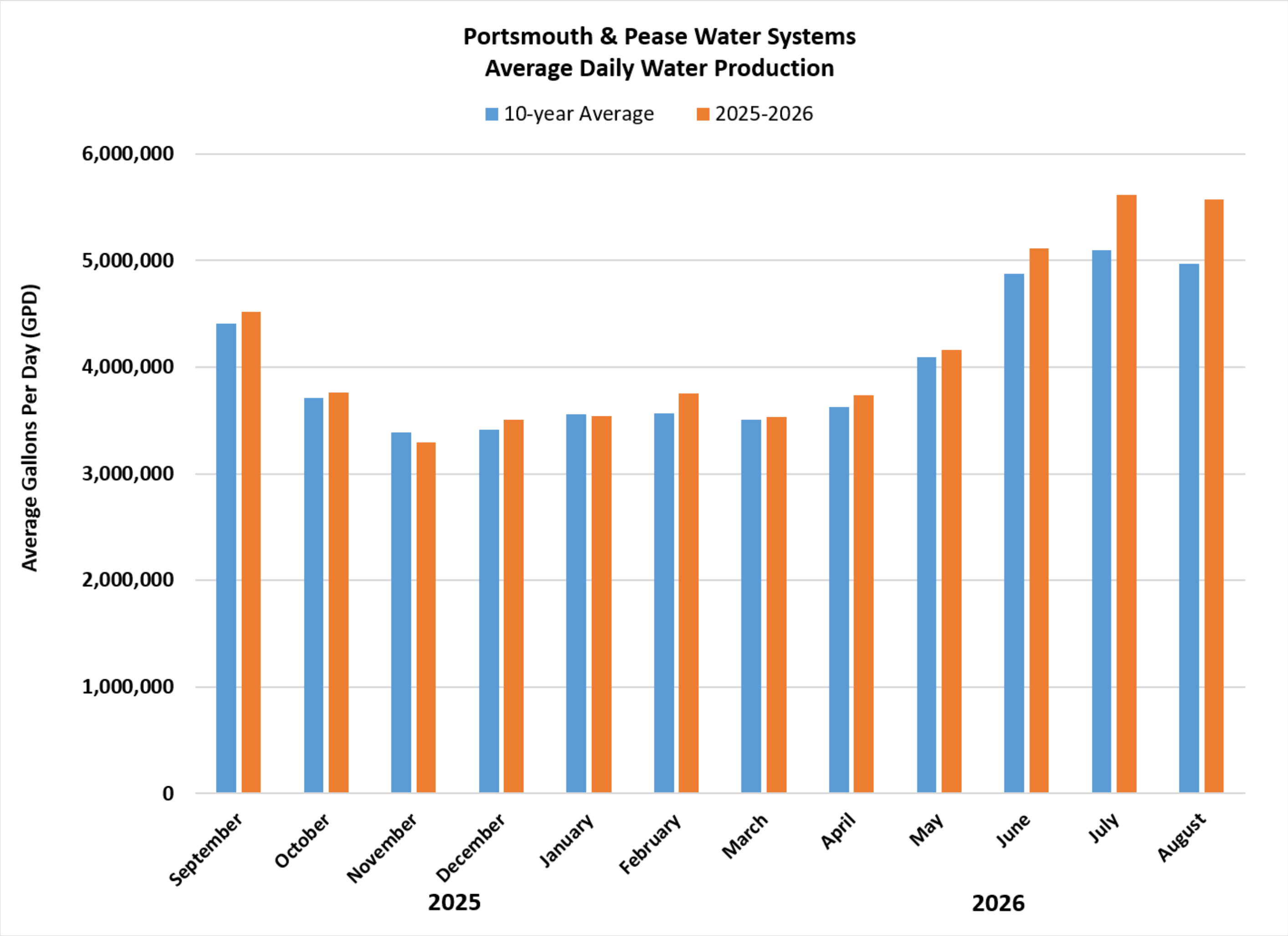

Bellamy Reservoir Water Level
Manual Reading Stage (ft)
Continuous Record
Spillway Elevation
Top of Screen
Elevation (feet-msl)
138
137
136
135
134
133
132
131
130
2016 Drought
2020 Drought
2022 Drought
2024 Drought
2025 Drought
Top of upper screen
1/8/2015
1/7/2016
1/5/2017
1/4/2018
1/3/2019
1/2/2020
12/31/2020
12/30/2021
12/29/2022
12/28/2023
12/26/2024
12/25/2025
12/24/2026

Stream Flow – Oyster River Gage



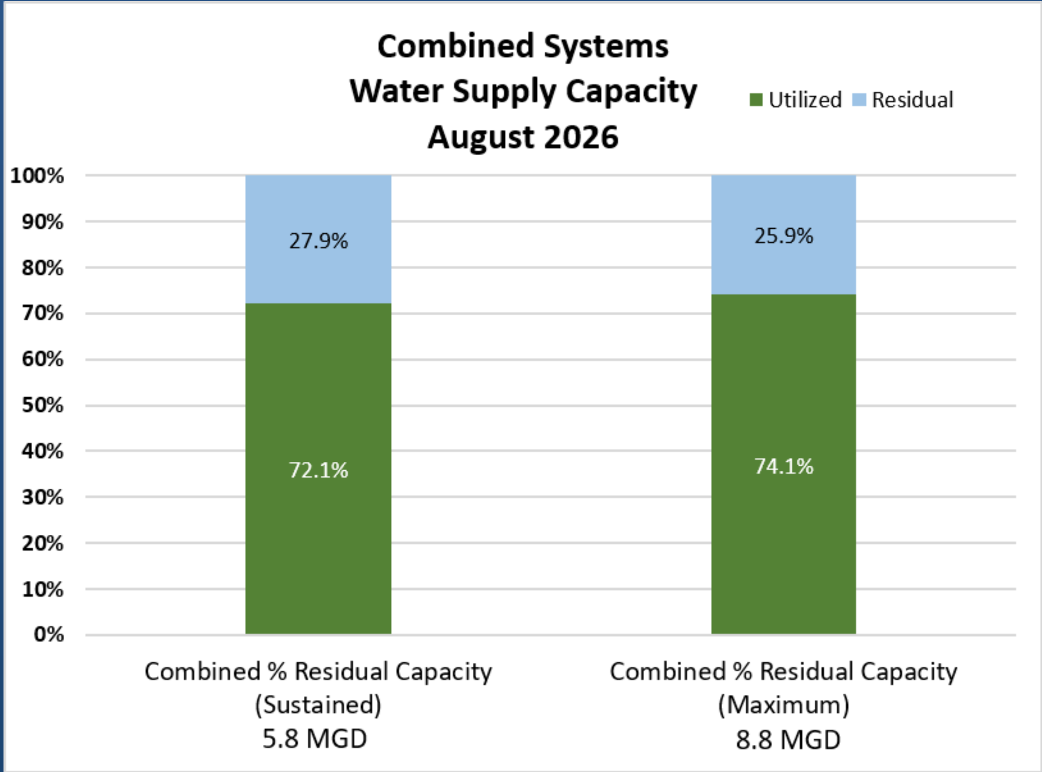


Supply Well Water Elevations
Collins Well
Portsmouth Well
Greenland Well
Madbury Well 2
Groundwater Elevation (feet NAVD88)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
2/26/2011
2/25/2013
2/25/2015
2/24/2017
2/24/2019
2/23/2021
2/23/2023
2/22/2025
2/22/2027
2016



Portsmouth & Pease Water Systems
Average Daily Water Production
10-year Average
2025-2026
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
Average Gallons Per Day (GPD)
September
October
November
December
January
February
March
April
May
June
July
August
2025
2026

Water Supply Capacity and Conditions



27.9% = 1.62 MGD

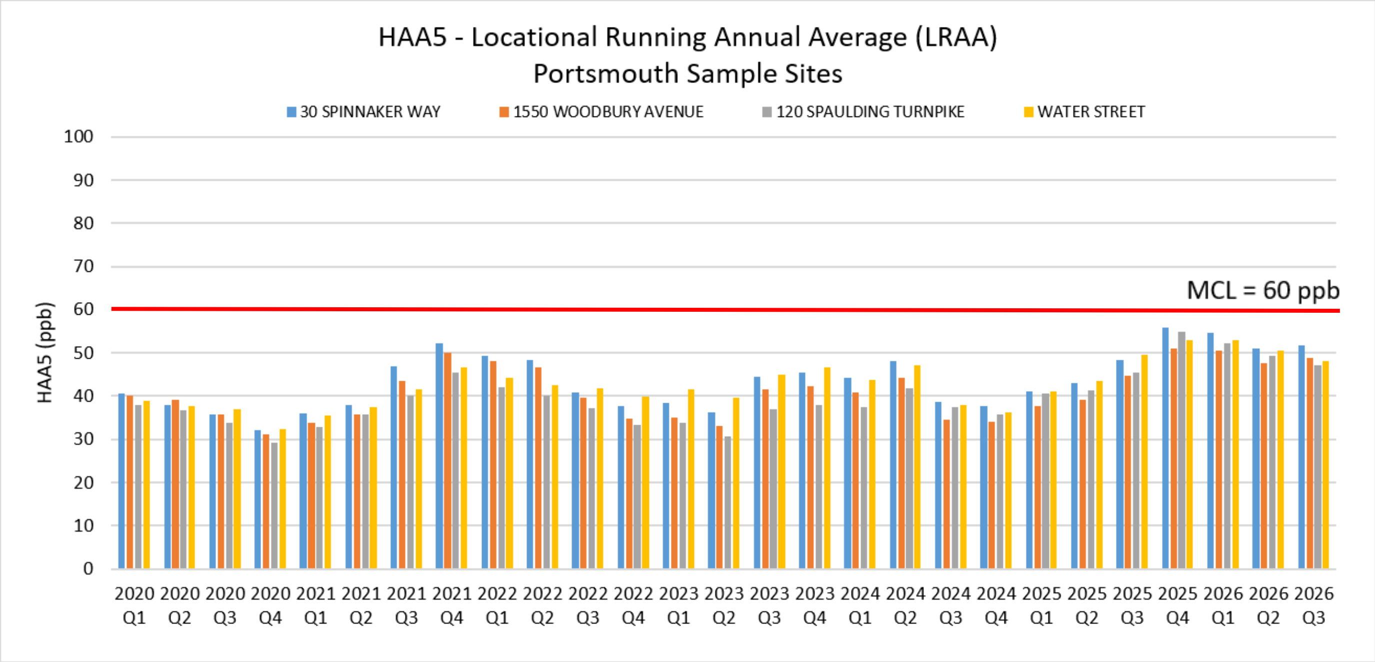
25.9% = 2.28 MGD

Annual Ave: 4.16 MGD

August 2026 Max Day: 6.52 MGD

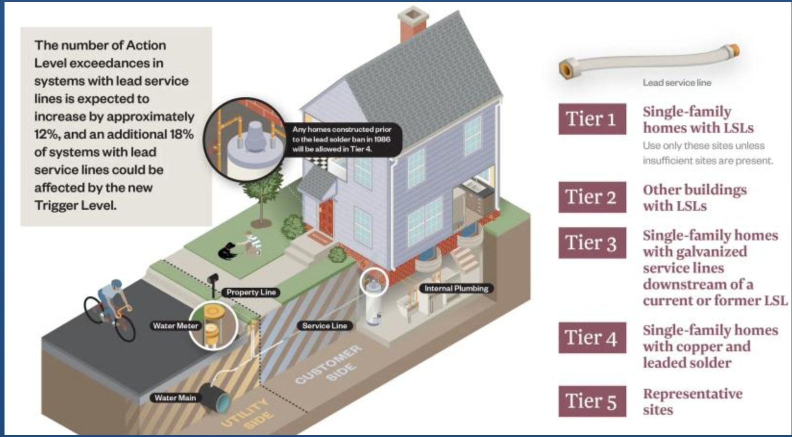
Regulatory Compliance – Disinfection Byproducts

Quarter III 2026	*MCL's => Reference*	TTHM 80 ppb	HAA5 60 ppb
	Locational Running Average	Locational Running Average	Locational Running Average
321	30 SPINNAKER WAY	**39**	**52**
325	1550 WOODBURY PLAZA	**32**	**49**
323	120 SPAULDING TURNPIKE	**31**	**47**
324	WATER STREET	**46**	**48**



Regulatory Compliance – Q3 Lead & Copper Monitoring

- 26/30 samples collected and analyzed for lead and copper
  - All samples were collected by single-family residential customers with galvanized services
- All results ‘non-detect’ for lead
- Highest copper concentration detected: 0.22 ppm
  - Copper MCL: 1.3 ppm



Regulatory Compliance – Lead & Copper Monitoring

- Starting in 2027, 200 water samples are required to be collected to meet compliance:
  - 100 samples from January 1 – June 30
  - 100 from July 1 – December 31
- Participation request letters will be sent to homeowners that have already received similar forms of outreach

Water System Projects

- Storage Tank Rehabilitations
- Greenland Well PFAS Treatment Design
- Portsmouth & Collins Wells PFAS Treatment Design
- Water Main Replacement

Storage Tank Rehabilitation & Painting

Rehabilitation Contract Awarded

- $2,210,230
- Contractor: Minoan Industrial, LLC
- Engineer: Haley-Ward

- Spinney Road Tank
  - Spot Rehab & Paint Exterior
  - Tank Drained September 2nd
  - Project Completion Target: November 6th

Greenland Well PFAS Treatment

- Schedule
  - Bid in November
  - Construction 2027-2028
- Opinion of Cost ~$7.7M
- Backup Well Permitting
- NH PFAS Settlement Funds
  - $3,062,540 – Portsmouth
- NH SRF Funds ($6.5 M Loan)
  - $861,791 Emerging Contaminant (100% Forgiveness)
  - $563,821 10% Forgiveness

Portsmouth & Collins Wells PFAS Treatment

- Final design in FY27
- Construction anticipated 2028 - 2030
- Two (2) Granular Activated Carbon (GAC) vessels
- No commitment from Air Force

Water Main Replacement Projects

Priority Areas

- Edmond Ave.
- Chapel St.
- Cabot St. & Austin St.
- Creek Neighborhood
- Coakley Road Neighborhood
- Lafayette Road - South

Gosling Road – Break on September 3rd

PFAS Update

12-Month Rolling Average
October 2025 – September 2026

12-MONTH ROLLING AVERAGE 2026 Q3		EPA MCL (2026)	NH MCL	MADBURY WTP FINISHED	MADBURY WELL 2	MADBURY WELL 3	MADBURY WELL 4R	MADBURY WELL 5	PORTSMOUTH WELL	COLLINS WELL	GREENLAND WELL	PEASE WTP
Perfluorohexanesulfonic acid(PFHxS)	ng/L	**-**	**18**	0.0	0.7	0.4	0.2	0.7	8.5	2.1	2.0	0.0
Perfluorooctanesulfonic acid (PFOS)	ng/L	**4**	**15**	0.9	1.3	1.2	0.8	0.7	**5.7**	3.9	3.7	0.0
Perfluorooctanoic acid (PFOA)	ng/L	**4**	**12**	1.9	2.8	2.2	2.1	2.0	**6.9**	3.6	**4.2**	0.0
Perfluorononanoic acid (PFNA)	ng/L	**-**	**11**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	**-**		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perfluorobutanesulfonic acid (PFBS)	ng/L			1.0	1.7	1.4	1.2	1.6	3.8	9.7	2.5	0.0

https://www.portsmouthnh.gov/publicworks/water/portsmouth-water-system-pfas-updates

PFOS and PFOA Hazardous Substance Designation

An official website of the United States government Here's how you know

EPA United States Environmental Protection Agency

Search EPA.gov

Environmental Topics | Laws & Regulations | Report a Violation | About EPA

Home / News Releases

Related Links

Headquarters | Land and Emergency Management (OLEM)

Read other EPA News Releases about PFAS

Contact Us about News Releases

Biden-Harris Administration Finalizes Critical Rule to Clean up PFAS Contamination to Protect Public Health

EPA action designates two widely used PFAS as hazardous substances under the Superfund law, improving transparency and accountability to clean up PFAS contamination in communities

April 19, 2024

Contact Information
EPA Press Office (press@epa.gov)

WASHINGTON – Today, April 19, 2024, the U.S. Environmental Protection Agency (EPA) is taking another step in its efforts to protect people from the health risks posed by exposure to "forever chemicals" in communities across the country. Exposure to per-and polyfluoroalkyl substances (PFAS) has been linked to cancers, impacts to the liver and heart, and immune and developmental damage to infants and children. This final rule will designate two widely used PFAS chemicals, perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS), as hazardous substances under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as Superfund, and will help ensure that polluters pay to clean up their contamination.

- In April 2024, the EPA announced PFOA and PFOS will be designated as hazardous substances under the Superfund law
- This decision was challenged in court by the US Chamber of Commerce
- EPA re-affirmed in Sept 2025 they would defend this designation

Careers | About | Contact | Subscribe | United States

WOMBLE BOND DICKINSON

What We Do | Locations | Insights | People

FEDERAL GOVERNMENT

D.C. Circuit Rejects Challenge to EPA's CERCLA Designation of PFOA & PFOS as Hazardous Substances

Sep 15 2026 • 4 Min Read

Contributors

James Bernier, Jr.
Lisa Rushton
Ami P. Patel

Related

Chemicals And Polymers
Environment And Natural Resources
Litigation

On August 18, 2026, the U.S. Court of Appeals for the District of Columbia Circuit issued an opinion upholding the EPA's designation of perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) as hazardous substances under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The court denied the consolidated petitions filed by seven industry groups challenging the rule in *Chamber of Commerce of the United States v. EPA.*

Businesses that manufacture, use, transport, manage, discharge, or

https://www.epa.gov/newsreleases/biden-harris-administration-finalizes-critical-rule-clean-pfas-contamination-protect

https://www.womblebonddickinson.com/us/insights/federal-government/102o0y9/d-c-circuit-rejects-challenge-to-epas-cercla-designation-of-pfoa-pfos-as-haza

PFOS and PFOA Hazardous Substance Designation

United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA CIRCUIT

Argued January 20, 2026 Decided August 18, 2026

No. 24-1193

CHAMBER OF COMMERCE OF THE UNITED STATES OF AMERICA, ET AL.,
PETITIONERS

v.

ENVIRONMENTAL PROTECTION AGENCY AND LEE M. ZELDIN, IN HIS OFFICIAL CAPACITY AS ADMINISTRATOR, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,
RESPONDENTS

CLEAN CAPE FEAR, ET AL.,
INTERVENORS

Consolidated with Nos. 24-1261, 24-1266, 24-1271, 24-1272

On Petitions for Review of a Final Rule of the Environmental Protection Agency

Elbert Lin argued the cause for petitioners. With him on the briefs were *Andrew R. Varcoe*, *Stephanie A. Maloney*, *Paul T. Nyffeler*, *David M. Parker*, *Matthew Z. Leopold*, *Christopher*

https://media.cadc.uscourts.gov/opinions/docs/2026/08/24-1193-2188689.pdf

An official website of the United States government Here's how you know

EPA United States Environmental Protection Agency

Search EPA.gov

Environmental Topics | Laws & Regulations | Report a Violation | About EPA

Home / Superfund

Superfund

- Learn About Superfund
- Community Involvement
- Cleanup Support
- Accomplishments & Benefits
- Cleaning up Sites
- Contaminants at Superfund Sites
- Contaminated Media at Superfund Sites
- Policy, Reports & Other Documents

Questions and Answers about Designation of PFOA and PFOS as Hazardous Substances under CERCLA

On this page:

- Why is EPA designating PFOA and PFOS as hazardous substances?
- What does the rule require? When do these requirements go into effect?
- Does designation require response actions (e.g., investigation, cleanup)?
- How does this action help local and state governments, tribal nations, or members of the public concerned about PFAS contamination?
- How does CERCLA operate?
- How will the rule impact liability?
- Will there be an increase in NPL sites as a result of this rulemaking?

Related Pages

- Designation of PFOA and PFOS as CERCLA Hazardous Substances
- PFAS Enforcement Discretion and Settlement Policy under CERCLA.

In August 2026, a federal appeals court in **a unanimous ruling** this week rejected industry groups' lawsuit

https://www.epa.gov/superfund/questions-and-answers-about-designation-pfoa-and-pfos-hazardous-substances-under-cercla

United Nations Report on PFAS:

Welcome to the United Nations | العربية 中文 English Français Русский Español Português Kiswahili Other

United Nations | UN News
Global perspective Human stories

SEARCH

Home | Topics | In depth | Secretary-General | Media

AUDIO HUB | SUBSCRIBE

Highly persistent toxic waste threatens 'many, if not all, human rights'

© Adobe Stock/Surasak | Landfills cause pollution by releasing toxic liquids into local water sources.

14 September 2026 | Climate and Environment

Poor management of toxic chemicals and hazardous waste threatens "many, if not all, human rights," the newly appointed independent human rights independent expert on the rising threat told the Human Rights Council on Monday.

RELATED STORIES

https://news.un.org/en/story/2026/09/1168329

"concludes that PFAS pose a profound threat to human rights and the environment that compels an immediate ban of all non-essential uses of PFAS and urgent action at every level to effectively control PFAS and prevent PFAS pollution."

United Nations | A/HRC/63/27

General Assembly

Distr.: General
6 July 2026

Original: English

Human Rights Council
Sixty-third session
7 September–9 October 2026
Agenda item 3
Promotion and protection of all human rights, civil, political, economic, social and cultural rights, including the right to development

Forever chemicals and human rights

Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes, Marcos Orellana

Summary

In the present report, submitted pursuant to Human Rights Council resolution 54/10, the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes examines how per- and polyfluoroalkyl substances (PFAS) impair the effective enjoyment of human rights. He explores how these highly persistent chemicals that lack analogues in the natural world have the potential to irreversibly alter the chemical composition of life-supporting ecosystems and impair human and environmental health. He concludes that PFAS pose a profound threat to human rights and the environment that compels an immediate ban of all non-essential uses of PFAS and urgent action at every level to effectively control PFAS and prevent PFAS pollution.

https://docs.un.org/en/A/HRC/63/27?_gl=1*1d96fgv*_ga*MTE5MDI0MzUzOC4xNzg5NTYzOTY2*_ga_S5EKZKSB78*czE3ODk1NjM5NjYkbzEkZzAkdDE3ODk1NjM5NzgkajQ4JGwwJGgw

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

Updates - PFAS and Cybersecurity

September 16, 2026

Brandon Kernen – DWGB Bureau Administrator

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

Cybersecurity, Funding & Resiliency

Cybersecurity Initiatives

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

- Security Assessments
- Sharing Advisories: Cyber Threat Targeting Water and Wastewater Sector Internet-Facing PLCs
- NH Water Sector Stakeholder Meetings - March 2026 and September 2026
- New training contact hour policy for DW Operators
- Mandatory 2 hours of cybersecurity training

JOINT CYBERSECURITY ADVISORY

TLP:CLEAR

Co-Authored by:

Product ID: AA26-097A

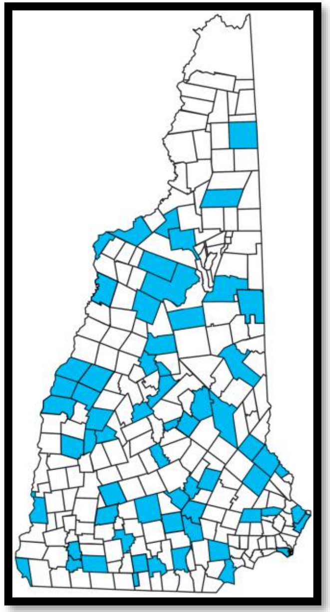
Iranian-Affiliated Cyber Actors Exploit Programmable Logic Controllers Across US Critical Infrastructure

Publication: April 7, 2026

Last Update: July 22, 2026

Federal Bureau of Investigation
Cybersecurity and Infrastructure Security Agency
National Security Agency
Environmental Protection Agency
Department of Energy
United States Cyber Command – Cyber National Mission Force
Department of the Treasury

Cybersecurity Initiatives

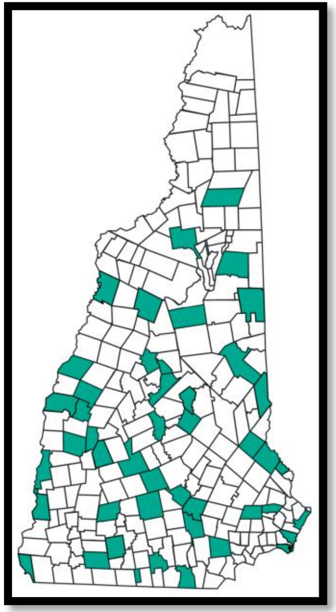


Drinking Water Utilities

- ARPA Grant Program
- Cybersecurity In-A-Box
  - Assessment
  - Equipment
  - Training
- Cybersecurity rules for DW & WW
  - Senate Bill 589

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

Wastewater Utilities



485:3-e Cybersecurity Protection Program.

I. Public water systems shall implement a cybersecurity protection program that is commensurate with the size and complexity of the public water system in accordance with rules adopted by the department.

II. Public water systems that do not use an Internet-connected control system are exempt from the provisions of this section.

III. In this section, "cybersecurity protection program" means steps to prevent an event from occurring on or being conducted through a computer network that jeopardizes the confidentiality, integrity, or availability of computers, information systems, communications systems, networks, physical or virtual infrastructure controlled by computers or information systems, or the information or processes residing thereon.

IV. The commissioner may adopt rules to implement a cybersecurity protection program for public water systems.

197:7 New Section; Cybersecurity Protection Program; Wastewater Treatment Facilities. Amend RSA 485-A by inserting after section 485-A:5-e the following new section:

485-A:5-f Cybersecurity Protection Program.

Public Water System Cybersecurity Emergency Information

What you can do now to help prevent a cyber incident:

1. Reduce exposure to the public-facing internet
2. Conduct regular Cyber Assessments
3. Change default passwords IMMEDIATELY!
4. Conduct an inventory of OT/IT Assets
5. Develop and exercise cybersecurity Indent Response & Recovery Plans
6. Backup OT/IT Systems
7. Reduce exposure to vulnerabilities
8. Conduct Cyber Awareness Training - regularly

WHEN IN DOUBT - REPORT......DON'T WAIT!

In the event of a suspected or actual cyber incident call as soon as possible to prevent further damage.

Whenever possible, the employee that discovered the incident should make notifications to those determined by each facility – such as:

- Superintendent/DPW Director
- Town Administrator
- Local Police
- Insurance Carrier
- SCADA Integrator & Service Provider
- NHDES

Important Cyber Contact Numbers

Important Cyber Contact Numbers

If a cyber incident results in any impairments or disruptions that reduce the public water system's ability to continue delivering safe drinking water, please notify the DWGB within 24 hours and follow procedures outlined in your emergency plan.

New Hampshire Department of Environmental Services:

Monday – Friday 8:00 AM to 4:00 PM **603-271-2513**

After Hours: NH State Police at **603-223-4381** (ask for the on-call person at NHDES)

Primex members call (24/7) ....**603-225-2841 Ext.5 - OR - 800-698-2364 Ext.5**
Cybersecurity & Infrastructure Security Agency (CISA) Region 1 .... **202-770-8991**
NH Cyber Integration Center (NHCIC) .... nh-cic@doit.nh.gov
FBI Boston **857-386-2000**

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

PFAS Rule and Funding

Federal PFAS Maximum Contaminant Levels
5/18/26 EPA Rule Revision

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

1- Maintain MCL standards for PFOA (4 ppt) & PFOS (4 ppt)

2- Rescind & Re-Evaluate Standards for PFNA, PFHxS, GenX & PFBS

- In NH, all water systems exceeding the four compounds above already exceed the 4 ppt standard for PFOA &/or PFOS
- NH already has standards for PFNA (11 ppt) & PFHxS (18 ppt)
- GenX has not been meaningfully detected in NH drinking water;
- PFBS has been detected but at levels well below the proposed standard of 2,000 ppt.

PFAS State and Federal Maximum Contaminant Levels

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

Compound	NH Standards	Federal MCL	2029 MCL Compliance
PFOA	12 ppt	4.0 ppt	4.0 ppt
PFOS	15 ppt	4.0 ppt	4.0 ppt
PFHxS	18 ppt	10 ppt	18 ppt
PFNA	11 ppt	10 ppt	11 ppt
HFPO-DA (commonly known as GenX Chemicals)	None	10 ppt	--
Mixtures containing two or more of PFHxS, PFNA, HFPO-DA, and PFBS	Not Applicable	1 (unitless) Hazard Index	--

PFAS Rule Timeline

APRIL 2027

Complete Initial Monitoring

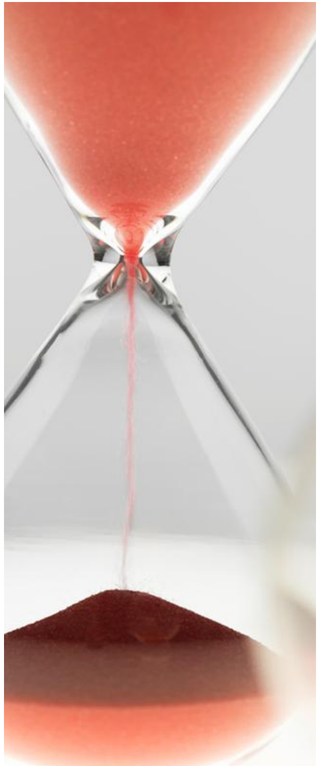
Review past data and schedule to ensure sample number and frequency will be met

Begin Compliance Monitoring

***APRIL 2029**

Deadline to reduce levels below 4 ppt PFOA / PFOS

Start MCL violations and Public Notices



[EPA's Final PFAS National Primary Drinking Water Regulation webpage]()

PFAS Rule Timeline

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

USEPA's May 2026 draft revised rules contain provisions to allow the extension/exemption of the April 2029 compliance deadline to April 2031.

Each water system must request the exemption. NHDES does not intend to support this or include this in its PFAS rules.

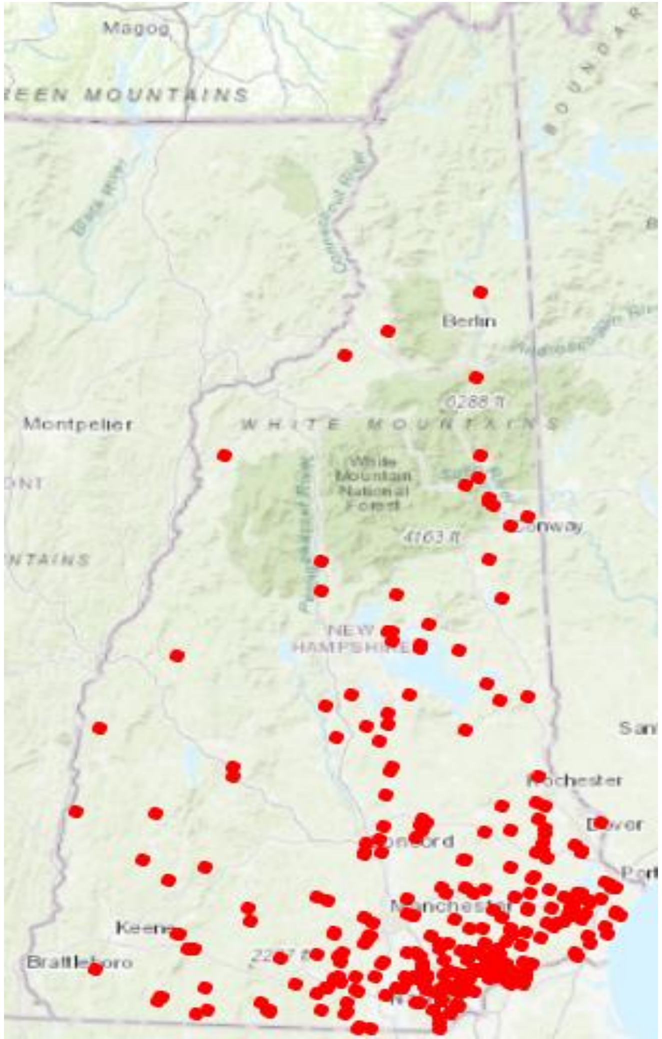
NEW HAMPSHIRE DEPARTMENT OF Environmental Services

PFAS Funding

Public Water Systems Exceeding EPA's MCL for PFOA & PFOS

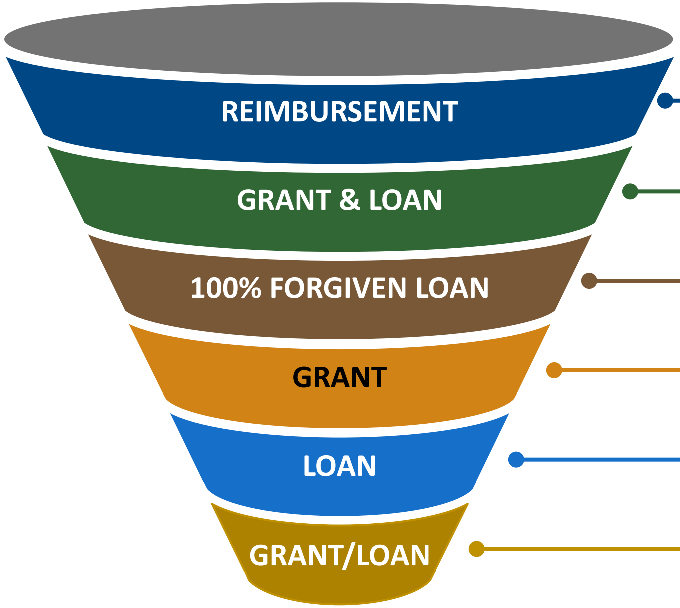
- More than double the number of public water system sources will exceed the new federal PFAS MCLs:
  - 100 sources exceed NH standards
  - 200 additional sources exceed EPA standards
- Cost for treatment for public water systems will likely exceed $0.3B just in New Hampshire.

NHDES



NEW HAMPSHIRE DEPARTMENT OF Environmental Services

PFAS State and Federal Funding



PFAS Compensation Fund

PFAS Remediation Grant & Loan Fund (PFAS RLF)

IIJA BIL Drinking Water State Revolving Fund Emerging Contaminants (DWSRF EC)

IIJA BIL Emerging Contaminant for Small or Disadvantaged Communities Grant (EC-SDC)

2026 Last Year

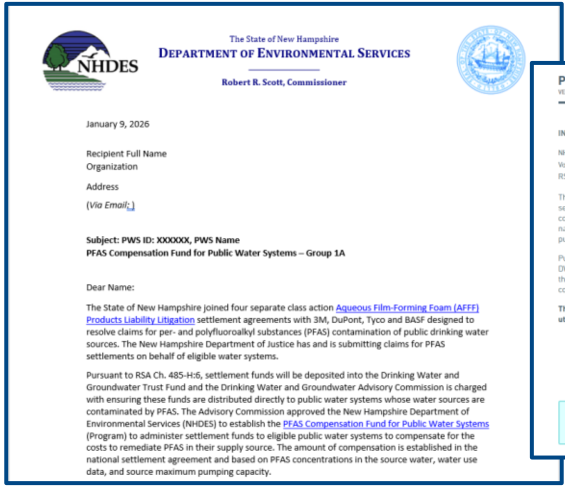
Drinking Water State Revolving Loan Fund (DWSRF)

Drinking Water Groundwater Trust Fund (DWGTF)

IIJA = Infrastructure Investment and Jobs Act of 2014 (formerly known as BIL)

PFAS COMPENSATION FUND

For Public Water Systems



The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES
Robert R. Scott, Commissioner

January 9, 2026

Recipient Full Name
Organization

Address

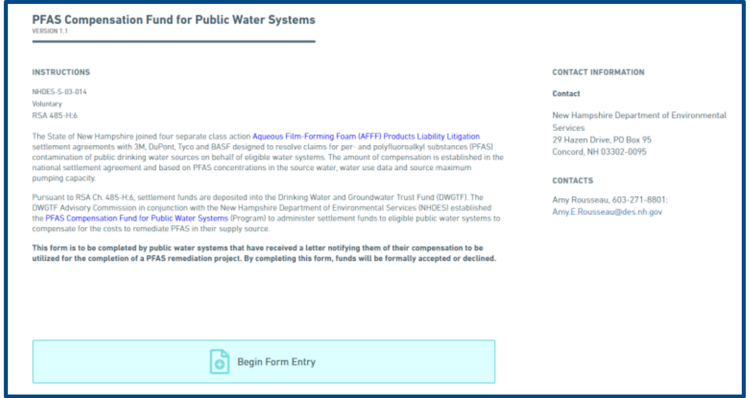
(Via Email:)

Subject: PWS ID: XXXXXX, PWS Name
PFAS Compensation Fund for Public Water Systems – Group 1A

Dear Name:

The State of New Hampshire joined four separate class action Aqueous Film-Forming Foam (AFFF) Products Liability Litigation settlement agreements with 3M, DuPont, Tyco and BASF designed to resolve claims for per- and polyfluoroalkyl substances (PFAS) contamination of public drinking water sources. The New Hampshire Department of Justice has and is submitting claims for PFAS settlements on behalf of eligible water systems.

Pursuant to RSA Ch. 485-H:6, settlement funds will be deposited into the Drinking Water and Groundwater Trust Fund and the Drinking Water and Groundwater Advisory Commission is charged with ensuring these funds are distributed directly to public water systems whose water sources are contaminated by PFAS. The Advisory Commission approved the New Hampshire Department of Environmental Services (NHDES) to establish the PFAS Compensation Fund for Public Water Systems (Program) to administer settlement funds to eligible public water systems to compensate for the costs to remediate PFAS in their supply source. The amount of compensation is established in the national settlement agreement and based on PFAS concentrations in the source water, water use data, and source maximum pumping capacity.



PFAS Compensation Fund for Public Water Systems
VERSION 1.1

INSTRUCTIONS

NHDES-S-03-014
Voluntary
RSA 485-H:6

The State of New Hampshire joined four separate class action Aqueous Film-Forming Foam (AFFF) Products Liability Litigation settlement agreements with 3M, DuPont, Tyco and BASF designed to resolve claims for per- and polyfluoroalkyl substances (PFAS) contamination of public drinking water sources on behalf of eligible water systems. The amount of compensation is established in the national settlement agreement and based on PFAS concentrations in the source water, water use data and source maximum pumping capacity.

Pursuant to RSA Ch. 485-H:6, settlement funds are deposited into the Drinking Water and Groundwater Trust Fund (DWGTF). The DWGTF Advisory Commission in conjunction with the New Hampshire Department of Environmental Services (NHDES) established the PFAS Compensation Fund for Public Water Systems (Program) to administer settlement funds to eligible public water systems to compensate for the costs to remediate PFAS in their supply source.

This form is to be completed by public water systems that have received a letter notifying them of their compensation to be utilized for the completion of a PFAS remediation project. By completing this form, funds will be formally accepted or declined.

CONTACT INFORMATION

Contact

New Hampshire Department of Environmental Services
29 Hazen Drive, PO Box 95
Concord, NH 03302-0095

CONTACTS

Amy Rousseau, 603-271-8801:
Amy.E.Rousseau@des.nh.gov

Begin Form Entry

- PWS must use funds to complete a PFAS drinking water remediation project.
- Requires written response whether the PWS will or will not use the funds.
- Compensation based on detectable PFAS levels, not above the MCLs.

Cyanobacteria Presentation

Elizabeth Crafton, PhD, Senior Principal Scientist, Hazen

Bloom Fighers: Building a Statewide Monitoring and Response Protocol to Defend against Cyanotoxins in New Hampshire

Elizabeth Crafton, PhD

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

Outline

- *Cyanobacteria and Cyanotoxin Background*
- *NHDES Treatment Optimization Plan Project*
  - ***Source Water***
  - ***Treatment***
- *Conclusions*

Background: Cyanobacteria and Cyanotoxins

Introduction to Cyanobacteria

Six Facts about Cyanobacteria

01

NOT algae

Prokaryotic organisms, oxygenic photosynthesis

02

Product Cyanotoxins

Cyanobacteria produce several types of cyanotoxins, four types are tracked

03

Source of HABs

Cyanobacteria dominate vast majority of freshwater HABs

04

Thrive in Extremes

Cyanobacteria can thrive in a wide range of conditions and habitats

05

Sign of Imbalance

Cyanobacteria dominance is a sign of an imbalance ecosystems causes HABs

06

Visible Scums are Not Needed for Risk

Cyanotoxins can occur without a visible bloom, high concentration can occur at low cell density

Cyanobacteria Impact on Raw Water Quality and WTP

Raw Water Quality

- Large biomass accumulation
- Taste and odor events
- Cyanotoxin occurrence
- Depleted oxygen
- Release of Fe and Mn
- Impact to fisheries
- Contribution of organic carbon
- Accumulation of organics
- Impact on monitoring equipment

WTP Impacts

- Clogging of intake screens
- Increased oxidant demand
- Increased coagulant demand
- Reduced filter performance
- Issues dewatering solids
- Cyanotoxin breakthrough conventional treatment
- Cell lysis during pre-oxidation
- pH adjustment impact on cyanotoxin removal
- Increased DBP formation

Overview of Common Cyanotoxins

Naturally occurring toxins produced by cyanobacteria

Common Freshwater Cyanotoxins (US)

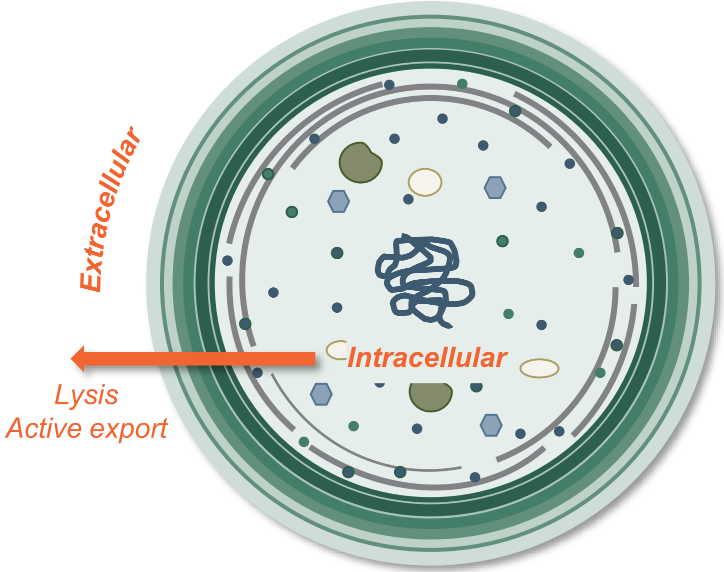
Cyanotoxin	Congeners	Organ(s) Toxicity	Symptoms
Microcystins	270 congeners	Liver (majority), heart, kidneys, nervous system, GI	GI symptoms, stomach pain, nausea, vomiting, diarrhea, severe headache, fever
Cylindrospermopsin	3 congeners	Liver, kidneys, thymus, heart	Fever, headache, vomiting, bloody diarrhea, hepatomegaly, kidney damage
Saxitoxin	57 congeners	Neurons	Nausea, vomiting, floating sensation, headache, muscle weakness, paresthesia, vertigo
Anatoxins	4 congeners	Neurons, neuromuscular junctions, nervous system	Loss of coordination, muscular fasciculation, convulsions, tremors, muscle weakness, shock, death via respiratory paralysis
BMAA		Disruption of protein folding	Motor neuron dysfunction, ALS/PDC symptoms

Hepatotoxin
Neurotoxin

Intracellular vs. Extracellular Cyanotoxins

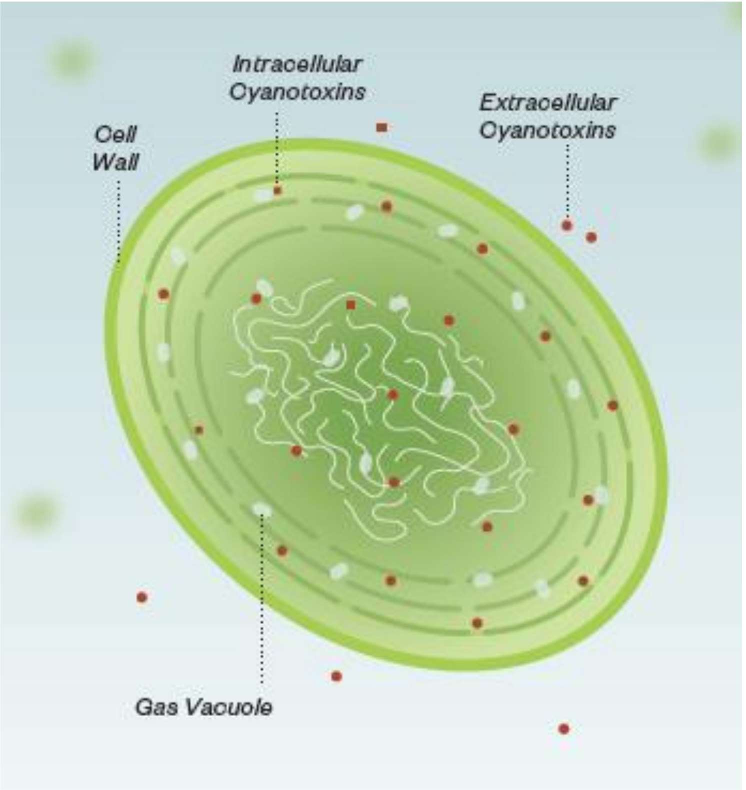
Intracellular accumulation or active release of cyanotoxins

- Cyanotoxins can be intracellular or extracellular
  - Intracellular is inside the cell
  - Extracellular is outside the cell
- Release of intracellular cyanotoxins
  - Lysis or active export
  - Quorum sensing
- Implications for treatment approaches



Cyanobacteria cell

Treatment: Physical Removal of Cyanobacterial Cells



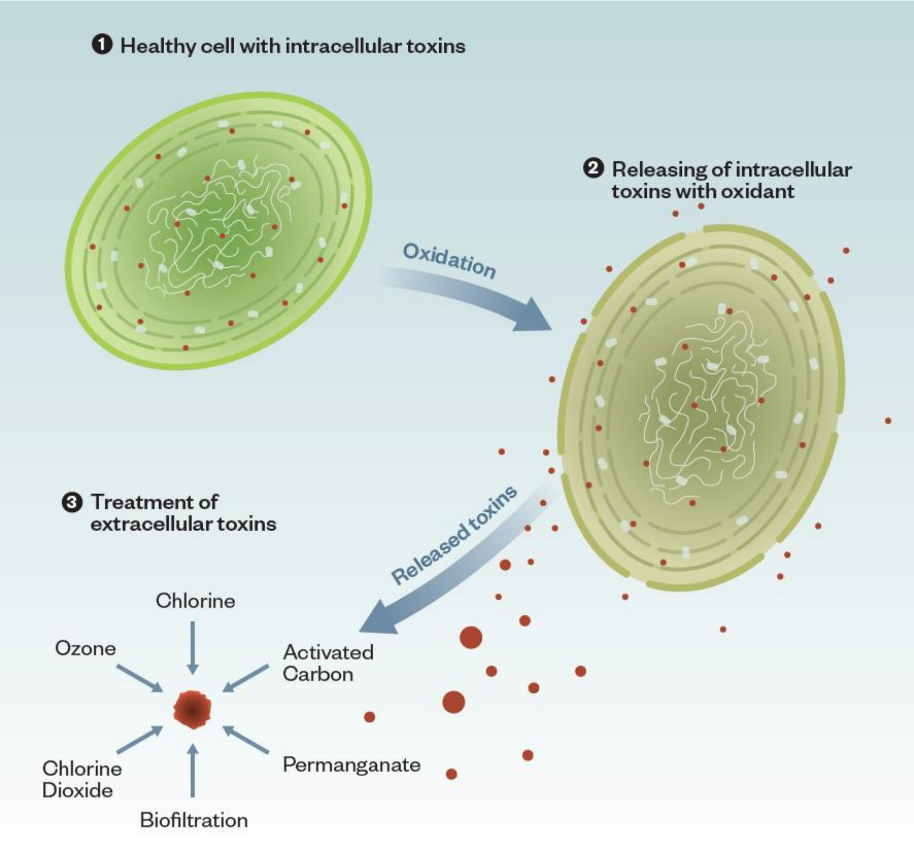
Wert et al. 2019. Utility Guidance Manual for the Management of Intracellular Cyanotoxins. WRF, Denver, CO.

Efficacy of Physical-Chemical Processes

Cyanobacteria / Cyanotoxin	Clarification		Filtration			Membranes		Adsorption	
	Conventional	***DAF***	***Direct Filtration***	***Bank Filtration***	***BAF***	***RO/NF***	***MF/UF***	***PAC***	***GAC***
Cyanobacterial Cell Removal	Effective	Effective	Effective	Effective	Effective	Effective	Effective	Ineffective	Likely
Microcystin	Ineffective	Ineffective	Ineffective	Possible	Possible	Effective	Ineffective	Varies	Varies
Cylindrospermopsin	Ineffective	Ineffective	Ineffective	Possible	Possible	Effective	Ineffective	Varies	Varies
Anatoxin A	Ineffective	Ineffective	Ineffective	Possible	Possible	Effective	Ineffective	Varies	Varies
Saxitoxin	Ineffective	Ineffective	Ineffective	Possible	Possible	Effective	Ineffective	Varies	Varies

Adapted from Hazen Algae White Paper (Summer, 2015) and *Adams, C. (2013) "Tailored Treatment of Cyanotoxins and Cyanobacteria: Oxidation, Adsorption and Other Technologies," WQTC 2013 Workshop.*

Toxin "Release and Treat" Approach



- Once out of the cell, toxins can be treated
- Extensive research has been performed on the rates of toxin degradation by various oxidants

Wert et al. 2019. Utility Guidance Manual for the Management of Intracellular Cyanotoxins. WRF, Denver, CO.

Degradation by Disinfection and/or Oxidation Processes

Oxidant	Microcystins	Cylindro-spermopsin	Anatoxin A	Saxitoxins
Free chlorine	pH	pH	Slow/no oxidation	
Monochloramine	Slow/no oxidation			
Chlorine dioxide	Slow/no oxidation			
Permanganate				
Ozone		pH	pH	
Hydroxyl radical				?
UV	High doses	High doses	High doses	?

Wert et al. 2019. Utility Guidance Manual for the Management of Intracellular Cyanotoxins. WRF, Denver, CO.

Treatment Optimization Plan Development

Project Overview

Background

- NH has had increasing HAB events, record events seen in 2024
- HABs strain water treatment infrastructure
- NH has developed new initiatives for cyanobacteria management and watershed protection strategies
- Project sets foundation for an actionable and adaptive cyanoHAB management strategy
- 13 NH PWSs included in project with varying bloom history

Overall project workplan

Identify and Review

- Data collection and analysis
- Site visits and understanding of limitations

Identify HAB Risk

Develop source water management strategies

Confirm cyanotoxin treatment capabilities and treatment response

Develop:

- Statewide Protocol
- Individual Facility Optimization Plans

Statewide Plan

- ***Statewide plan developed as guidance document***
- ***Contains background and how-to defining monitoring needs, management strategies, and treatment considerations***

Hazen

Hazen and Sawyer
498 Seventh Avenue, 11th Floor
New York, NY 10018 • 212.539.7000

New Hampshire Statewide Cyanobacteria Water Treatment Optimization Plan

Draft Interim Plan
May 1, 2026

Cyanobacteria Treatment Optimization Plan Outline

Source Water:

Reservoir Risk Assessment

Review historical data to inform source water risk

Reservoir Monitoring

Implement risk-informed source water monitoring plan

Watershed Management

Select strategies based on time-frame and water quality goals/limitations

Treatment:

Cyanotoxin event

Oxidize toxins

Cyanobacteria event

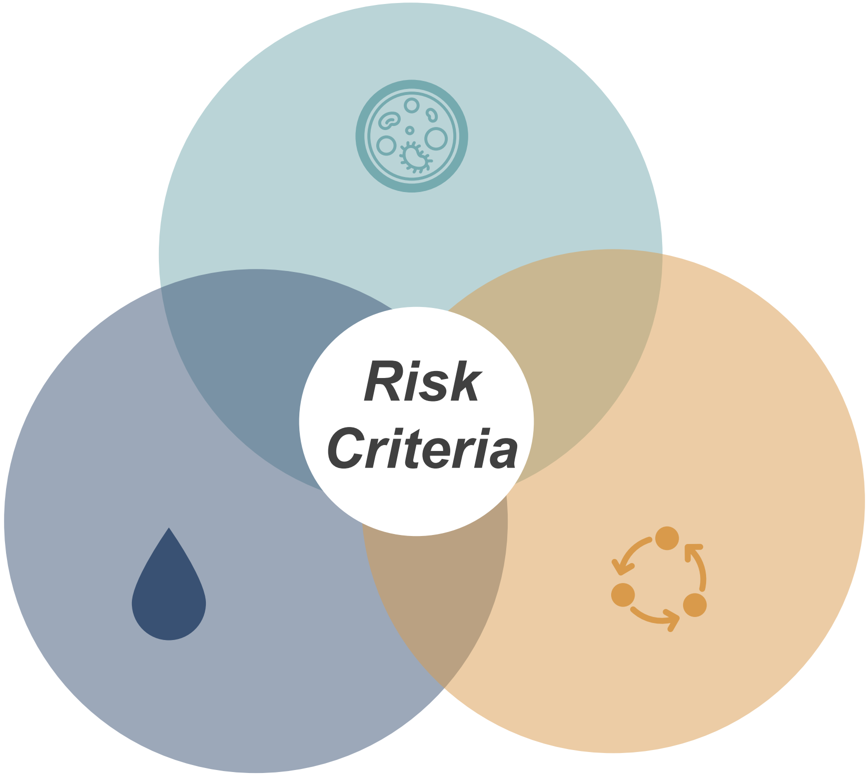
Lyse and/or remove cells (treatment-based)

Cyanotoxin + Cyanobacteria event

Oxidize toxins, lyse and remove cells

Source Water Monitoring

HAB Risk

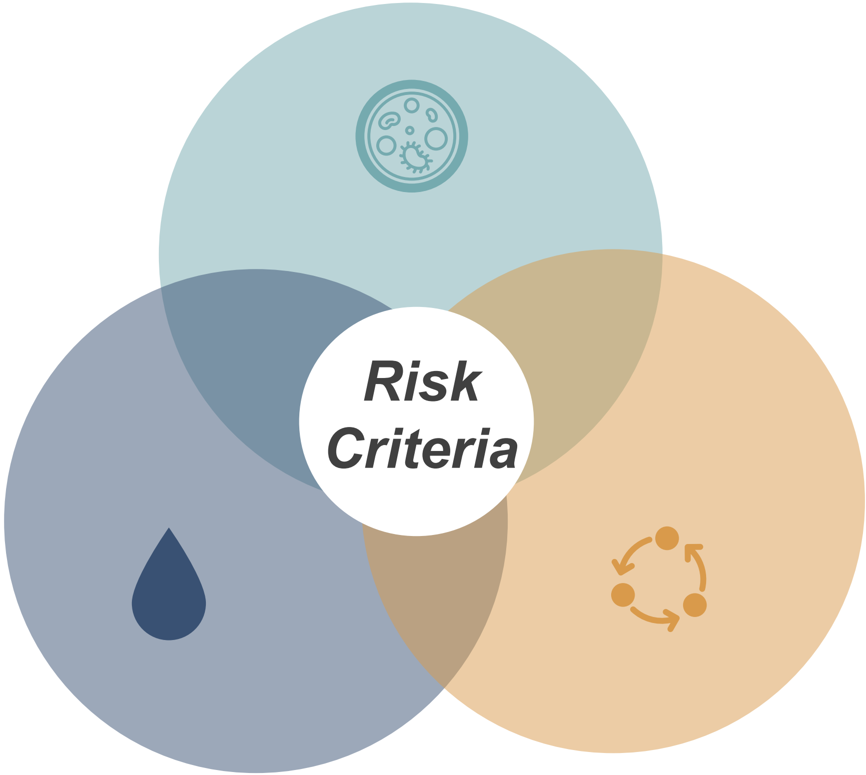


What is a source water monitoring risk criteria?

- Used to determine source water susceptibility to HABs and determine frequency of required monitoring parameters

Increased source water monitoring helps to:

- Protect public health and safety
- Establish baseline conditions
- Prevent cyanotoxin breakthrough in finished drinking water
- Communicate with the public



Water Quality

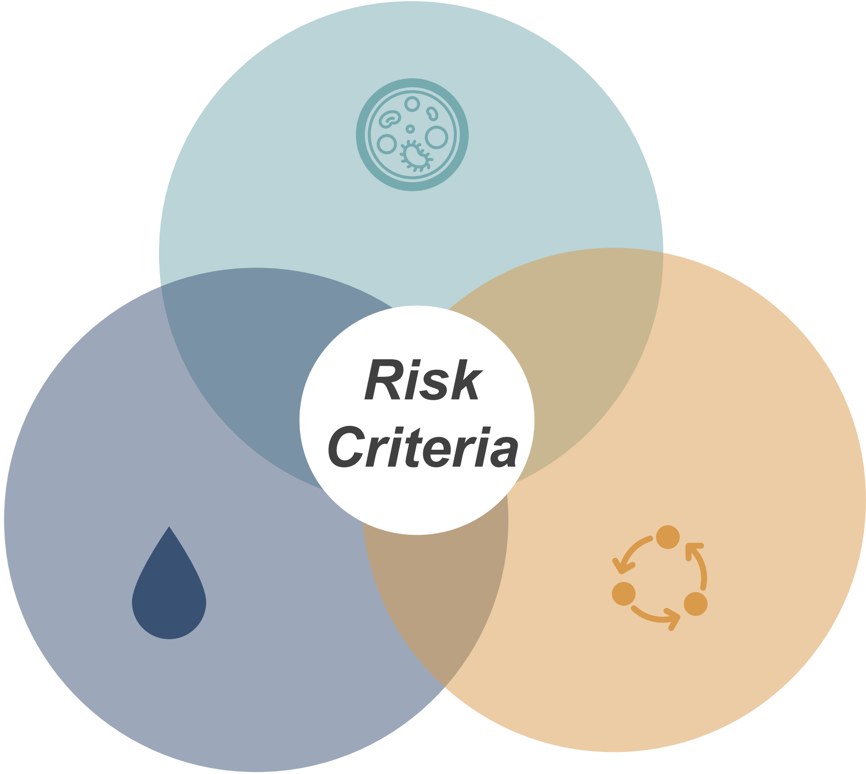
- Eutrophication (TSI-TP)
- Production (TSI-Chlorophyll-a)
- Water Temperature
- Internal and External Nutrient Loading
- Phycocyanin (Lake-Specific Average Above or Below Statewide Average)
- Data Quantity and Representation

Historical Events

- Akinetes Presence
- HAB Occurrences
- Cyanotoxins

Morphology

- Max Depth, Perimeter/ Surface Area



Water Quality

- Eutrophication (TSI-TP)
- Production (TSI-Chlorophyll-a)
- Water Temperature
- Internal and External Nutrient Loading
- **Phycocyanin (Lake-Specific Average Above or Below Statewide Average)**
- **Data Quantity and Representation**

Historical Events

- **Akinetes Presence**
- **HAB Occurrences**
- Cyanotoxins

Morphology

- **Max Depth, Perimeter/ Surface Area**

If data is not available, assumes moderate risk (3)

Summary of Risk Methodology

Criteria	Risk Category				
Description	**1**	**2**	**3**	**4**	**5**
Eutrophication (TSI-TP)		Oligotrophic (TSI <40)	Mesotrophic (TSI 40-50)	Eutrophic (TSI 50-60)	Hypereutrophic (TSI >60)
Production (TSI-Chla)		Oligotrophic (TSI <40)	Mesotrophic (TSI 40-50)	Eutrophic (TSI 50-60)	Hypereutrophic (TSI >60)
Water Temperature	Short period of germination temperatures		Moderate period of germination temperatures		Long period of germination temperatures
Internal and External Nutrient Loading	No significant internal or external loading		Significant loading from either internal or external sources		Significant loading from both internal and external sources
Data Quantity and Representation	Comprehensive Monitoring		Passive Monitoring		No Monitoring
Akinetes presence	No				Yes
Phycocyanin (Lake-Specific Average Above or Below Statewide Average)				Below	Above
HABs Occurrences	No previously known occurrences	1 previous occurrence	2 previous occurrences	3+ previous occurrences	Annual occurrences
Cyanotoxins	No previously known detections		Infrequent, low concentrations		Frequent, high concentrations
Max Depth, Perimeter/Surface Area		Depth > 10 m; circularity > 0.5	Depth > 10 m; circularity <= 0.5	Depth ≤ 10 m; circularity > 0.5	Depth <= 10 m; circularity <= 0.5

Summary of Risk-Based Monitoring

Risk	Baseline Methods	Frequency	Triggered Methods
High	Sonde/Probe Microscopy	Weekly	qPCR ELISA LC-MS/MS
Moderate	Sonde/Probe Microscopy	2x/month	qPCR ELISA LC-MS/MS
Low	Sonde/Probe Visual Observation*	Monthly	Microscopy qPCR ELISA LC-MS/MS

Monitoring Frequency
Spatial Coverage

**visual observations should be done weekly; defined as lake surveillance without samples, visual observation should be logged with each sampling event*

Summary of Methods

Biomass

Cyanotoxins

Microscopy

Pigments

FlowCam

Remote Sensing

qPCR

Test Strip

ELISA

LC-MS/MS Methods

Cyanotoxin Monitoring Flowchart-Moderate and High Risk

Monitoring framework for cyanotoxins to ensure public health and safety

Parameter	Early Warning Threshold
Cell Count	2,000 cells/mL
Phycocyanin	2 μg/L
Chlorophyll	2.5 μg/L

qPCR Genetic Screening

Bi-monthly or Weekly qPCR screening as part of baseline monitoring

Sonde/Probe Enumeration

Within Baseline

Continue baseline monitoring

Above Early Warning

ELISA Toxin Screening qPCR

No Detection

Return to baseline monitoring after 2 consecutive negative results

Above Raw Water Threshold

Collect paired samples 3x week until below raw water threshold for 2 consecutive samples*

Detection

Collect paired samples weekly until 2 consecutive negative results (raw)*

ELISA – Raw Water

LC-MS/MS – Finished Water

Below Finished Water Threshold

Monitor paired daily until 2 consecutive negative results (finished)*

Above Finished Water Threshold

Resample twice: (1) within 24 hours (2) 48 hours

If results are above early warning level Contact NHDES

Initiate In-Plant Optimization

**Scum forming blooms that are observed will be simultaneously sampled for qPCR and ELISA*

**Test strip can be done with qPCR for near-term results*

Cyanotoxin Treatment Flowchart

Raw Water Toxin Detection

Can the current treatment processes effectively reduce the cyanotoxin concentrations?

Cyanotoxin Treatment Threshold:

The cyanotoxin concentration which can always be effectively treated under typical plant operating conditions

Cyanotoxin	Target Effluent Cyanotoxin Concentration (µg/L)
Anatoxin-a	0.3
Cylindrospermopsin	0.7
Microcystin	0.3
Microcystin-mix	0.3

$$Minimum\ CT = \frac{Min\ Tank\ Volume\ (gal) * Baffling\ Factor}{95th\ Percentile\ Flow\ \left(\frac{gal}{min}\right)} * 5th\ Percentile\ Oxidant\ Residual\ \left(\frac{mg}{L}\right)$$

Identify worse case ‘summer’ pH and Temperature (April-November as Default)

Treatment Reference Sheet

Cyanobacteria Treatment Reference Sheet:

In-Plant Treatment Adjustments to Meet Cyanotoxin Removal

If the current CT value is insufficient for reducing cyanotoxins below the threshold value, one or more treatment adjustments can be made:

Recommended Order: (1) Increase Disinfectant Concentration, (2) Add a Pre-Oxidant and/or Adjust pH

Cyanotoxin Treatment Reference Sheet:

In-Plant Treatment Adjustments to Meet Cyanotoxin Removal

If the current CT value is insufficient for reducing cyanotoxins below the threshold value, one or more treatment adjustments can be made:

Recommended Order: (1) Increase Disinfectant Concentration, (2) Add a Pre-Oxidant and/or Adjust pH

Increase Disinfectant Concentration

Directly increases the CT.

Important Considerations:

Regulatory Chlorine Residual Limits:

- Chlorine MRDL = 4.0 mg/L as Cl_2
- Chloramine MRDL = 4.0 mg/L as Cl_2
- Chlorine Dioxide MRDL = 0.8 mg/L as ClO_2

Increases formation of Disinfectant Byproducts

Aesthetic-Related Complaints (Taste + Odor)

Add a Pre-Oxidant

Provides an additional CT zone

Important Considerations:

Many systems do not have this capability

Increases formation of Disinfectant Byproducts

Downstream treatment related issues with this- i.e. filters/membranes

Adjust pH

Higher cyanotoxin removal at lower pHs for chlorine and at higher pHs for ozone.

Important Considerations:

Do NOT adjust pH outside typical operating range.

Many systems do not have this capability

Corrosion Concerns:

- Increased Lead + Copper Solubility at lower pHs
- Destabilization of pre-existing scale

Increase Tank Volume (Clearwell, Contact Basin, Etc.)

Larger tank volumes, at the same flowrate, result in higher detention times. This will increase the CT.

Important Considerations:

Increases formation of Disinfectant Byproducts

Decrease Plant Flowrate

A lower plant flowrate, at the same tank volume, will result in higher detention times. This will increase the CT.

Important Considerations:

Increases formation of Disinfectant Byproducts

Other Potential Options:

Change Disinfectant:

Changing a pre-oxidant chemical could provide additional protection to different cyanotoxins

Powder Activated Carbon (PAC):

Removal of cyanotoxin

$$CT = \frac{Tank\ Volume\ [mg/L] * Baffling\ Factor}{Flowrate\ [\frac{L}{min}]} * Disinifection\ Residual\ [\frac{mg}{L}]$$

Cyanotoxin Treatment Flowchart

Raw Water Toxin Detection

Below Cyanotoxin Treatment Threshold
No Treatment Changes Required

Above Cyanotoxin Treatment Threshold
Calculate Actual System CT and Associated Cyanotoxin Threshold

Actual System CT ≤ Required CT
In Plant Changes Required
(See Reference Sheet)

Actual System CT > Required CT
No Treatment Changes Required

Determine if Actual CT Values are Effective at Treating Toxins using the CT Reporting Tool

PWSID:
System/Water Source:
Prepared by:

Start Date:
Disinfectant Type: Free Chlorine
Profile Type: Microcystin-Mix

Template based on EPA Disinfection Profiling and Benchmarking technical guidance manual, Appendix C
Disinfection Profiling and Benchmarking: Technical Guidance

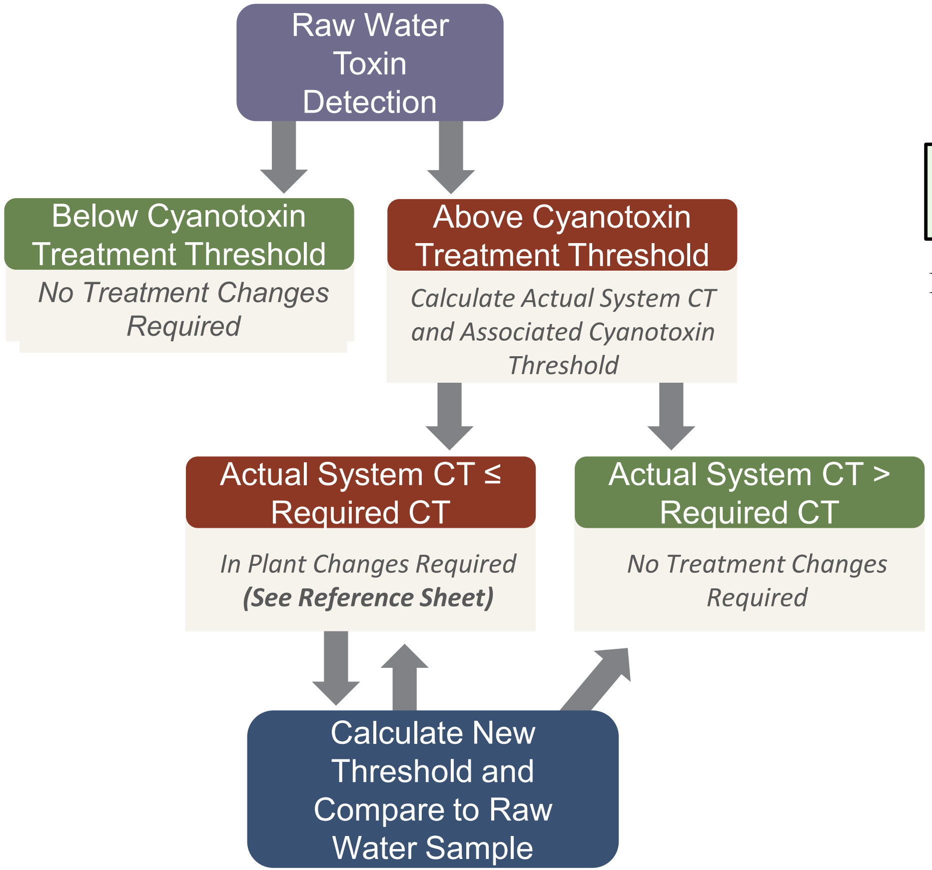
= user entry
= calculated

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

Date	Residual Disinfectant Concentration, mg/L	pH	Water Temperature (˚C)	Peak Hourly Flow Through Disinfection Zone, gpm	Disinfection Zone Volume, gal	Baffling Factor	Disinfection Contact Time, min	CT, min-mg/L	Log Inactivation*	Breakthrough Concentration, µg/L
1/1/2025	1	8	12	700	100000	0.5	71.43	71.43	8.9	3.38
1/2/2025	1	7.9	13	800	100000	0.5	62.50	62.50	1.4	3.47
1/3/2025	1	8.1	12.2	750	100000	0.5	66.67	66.67	1.3	2.18
1/4/2025	1	8.3	14.1	800	100000	0.5	62.50	62.50	1.4	1.28

$$\text{Actual } CT = \frac{Tank\ Volume\,(gal) * Baffling\ Factor}{Flow\left(\frac{gal}{min}\right)} * Oxidant\ Residual\left(\frac{mg}{L}\right)$$

Cyanotoxin Treatment Flowchart



Cyanobacteria Treatment Reference Sheet:
In-Plant Treatment Adjustments to Meet Cyanotoxin Removal

If the current CT value is insufficient for reducing cyanotoxins below the threshold value, one or more treatment adjustments can be made:

Recommended Order: (1) Increase Disinfectant Concentration, (2) Add a Pre-Oxidant and/or Adjust pH

CT Reporting Tool is being developed to calculate total cyanotoxin treatment capabilities with two zones

Cyanobacteria Treatment Flowchart

Raw Water Cyanobacteria Detection

Cells present but no toxins detected

→ **Add a pre-oxidant**

Benefits vary based on oxidant and cyanobacteria type. Do not use pre-oxidant if sheath-forming benthic organism identified. If using DAF, do not pre-oxidize if benthic organism identified

→ **Optimize Coagulation**

NOM drives coagulant dosing and organic material expected to increase. Increasing doses are likely to be required. Perform jar tests, streaming current, zeta if available to confirm dose needs

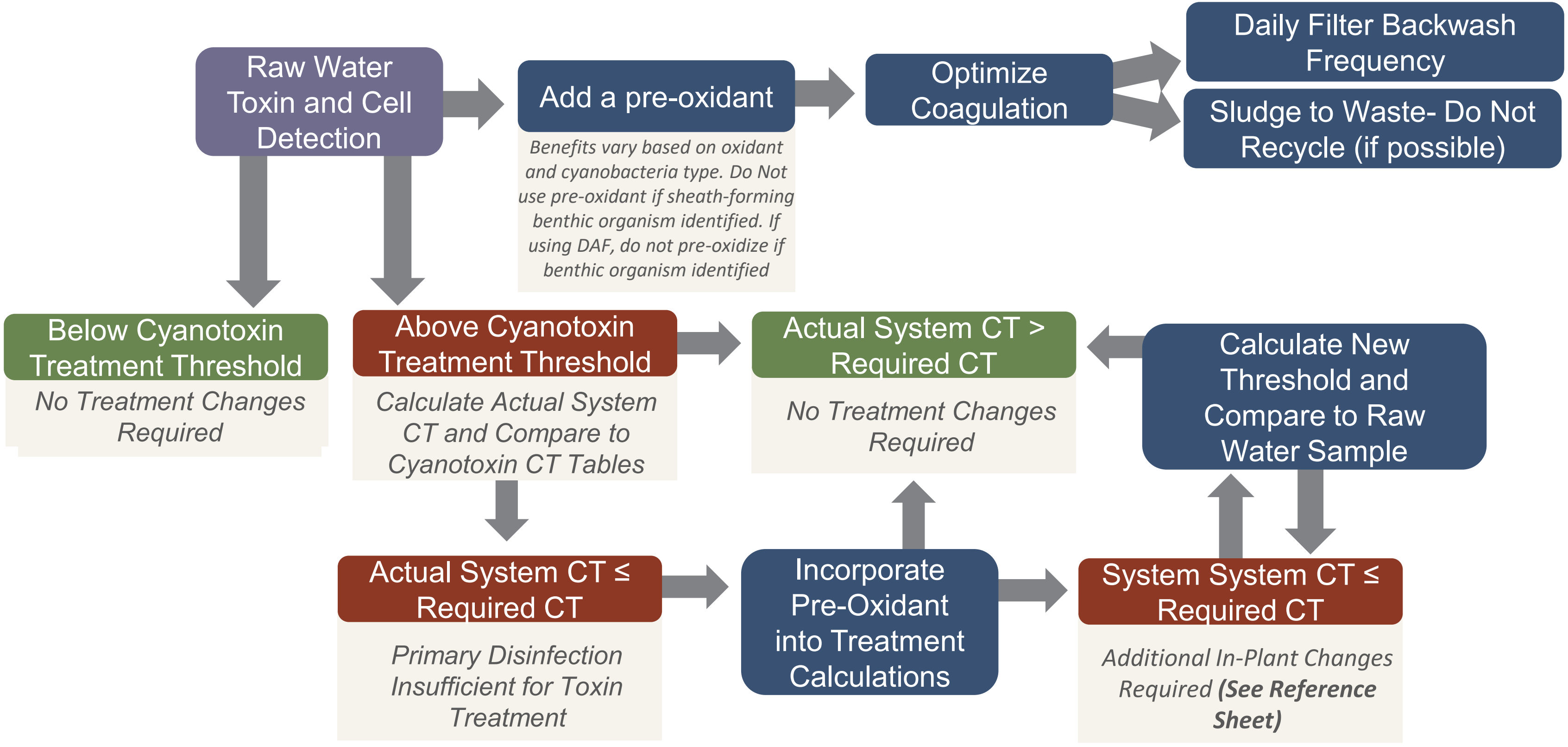
→ **Daily Filter Backwash Frequency**

→ **Sludge and Backwash to Waste - Do Not Recycle (if possible)**

Avoid solids build up to prevent biomass growth and risk of additional issues

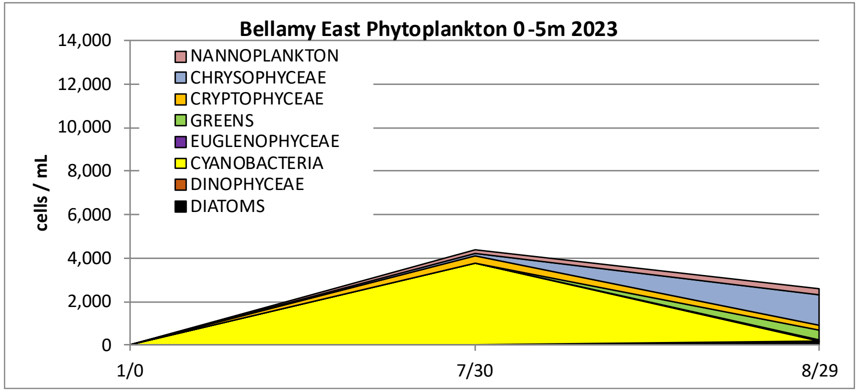
Free Chlorine > Permanganate ~ Chlorine Dioxide

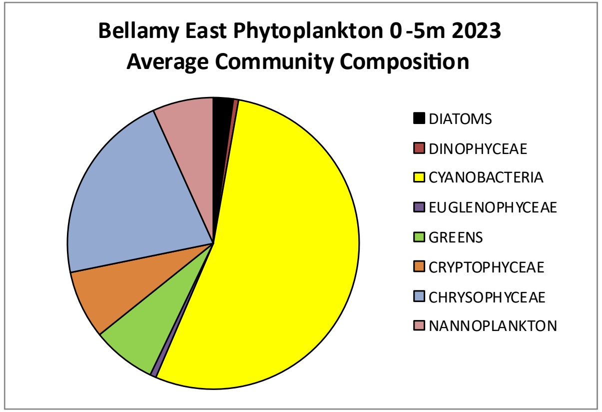
Cyanotoxin and Cyanobacteria Flowchart

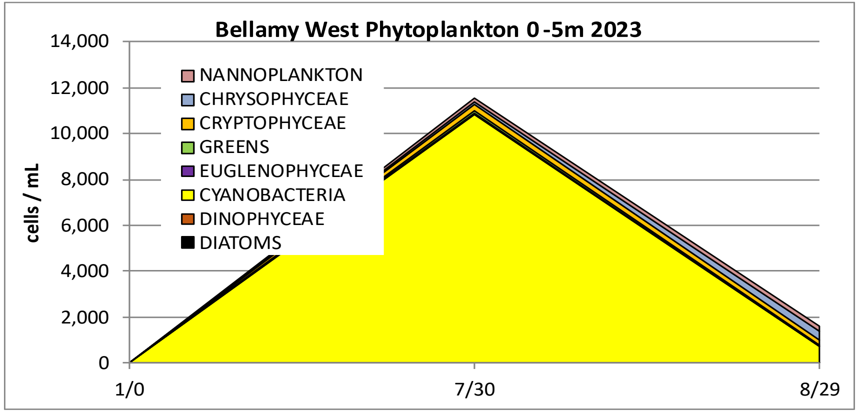


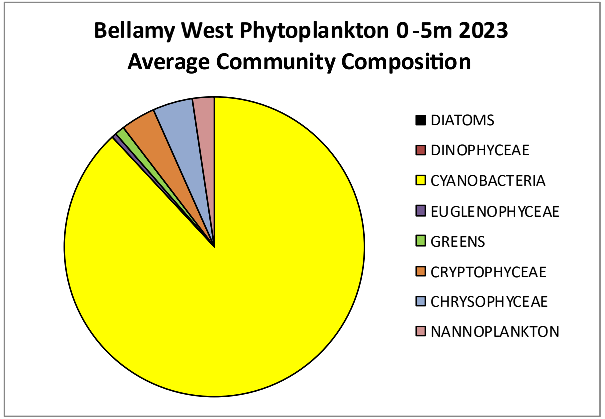
Bellamy Reservoir

City of Portsmouth: Bellamy Reservoir Snapshot









HAB Source Water Risk Scoring for Bellamy

Risk Criteria	Master Data	Score
Data Quantity and Representation	Representative; No monitoring	3
Phycocyanin (PWS Average Above/Below Statewide Average 3.57 µg/L)	Below (1.61 µg/L)	4
Akinetes Presence	Present	5
Historical HAB Occurrences	2 previous occurrences	4
Morphology (Max Depth, Perimeter/Surface Area)	Depth= 9.1 M; Circularity = 0.10	3
Risk Score		20
Total Possible Score		25
Risk Tier		High

Summary of Risk-Based Monitoring

Risk	Baseline Methods	Frequency	Triggered Methods
High	Sonde/Probe Microscopy	Weekly	qPCR ELISA LC-MS/MS
Moderate	Sonde/Probe Microscopy	2x/month	qPCR ELISA LC-MS/MS
Low	Sonde/Probe Visual Observation*	Monthly	Microscopy qPCR ELISA LC-MS/MS

Monitoring Frequency
Spatial Coverage

**visual observations should be done weekly; defined as lake surveillance without samples, visual observation should be logged with each sampling event*

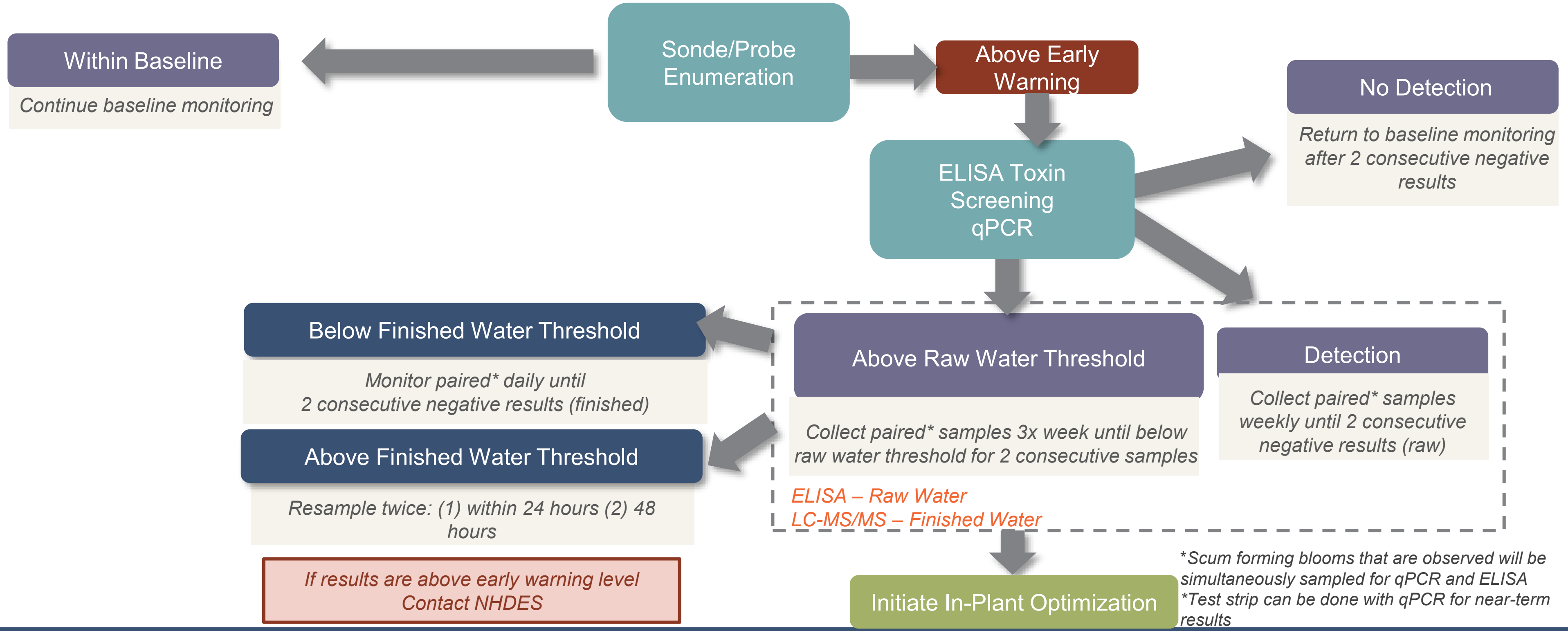
Cyanotoxin Monitoring Flowchart- Moderate and High Risk

Monitoring framework for cyanotoxins to ensure public health and safety

Parameter	Early Warning Threshold
Cell Count	2,000 cells/mL
Phycocyanin	2 µg/L
Chlorophyll	2.5 µg/L

qPCR Genetic Screening

Bi-monthly or Weekly qPCR screening as part of baseline monitoring



**Scum forming blooms that are observed will be simultaneously sampled for qPCR and ELISA*
**Test strip can be done with qPCR for near-term results*

Raw Water Concentration for Cyanotoxins

Cyanotoxin	Threshold Concentration (µg/L)
Anatoxin	0.3
Cylindrospermopsin	> 1000
Microcystin	3.8
Microcystin-mix	7.7

Source Water Management

Source Water Monitoring and Management

Harmful algal blooms (HABs) are a persistent and recurring issue for water bodies

PWSs are responsible for monitoring and managing bloom impacts

Management approaches include:

- **Reactive: responding after blooms occur**
- **Preventative: reducing conditions that promote blooms**

Without management, blooms tend to:

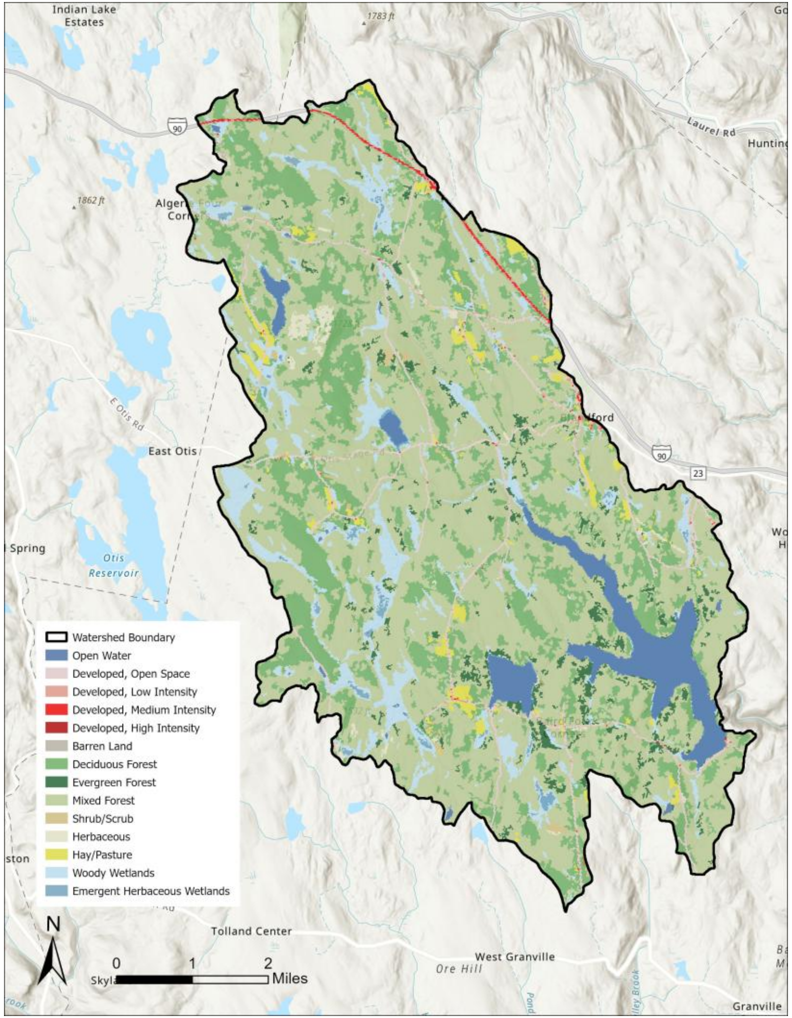
- **Occur more frequently**
- **Become more severe**
- **Persist for longer durations**
- **Jeopardizes future water quality**

Cyanobacteria produce akinetes (dormant resting cells), enabling seasonal recurrence

Excess nutrients (e.g., nitrogen and phosphorus) build up over time, fueling bloom growth

Watershed Management

- In-situ strategies are temporary without addressing watershed loads
- Common culprits:
  - **Wastewater treatment discharges**
  - **Agricultural runoff**
  - **Impervious surfaces**
  - **Septic systems**
- Monitoring is key to understanding watershed loads
  - **Streams monitoring**
  - **Reservoir influent monitoring and modeling**
  - **Remote sensing**
- Long-term approach



Overview of Common Mechanical Control Methods

Strategy	Strengths	Limitations	Considerations	Impacts
Hypolimnetic Oxygenation /Aeration	• Raise DO • Suppress internal nutrient/metal cycling • Maintains/disrupts stratification	• Installation and operational cost • Bathymetry	• Onsite O2 generation or LOX storage • Single or multi-level intake • Sediment oxygen demand for sizing	• Beneficial ecological impacts, great for fish habitats
Sediment Dredging	• Removal of nutrient rich sediments • Increase reservoir volume	• Operational cost • Sediment disposal logistics • Suspension of sediment-bound nutrients/metals	• Ineffective if external nutrients not controlled • Hydraulic or mechanical options	• Disturbance of microbial community
Ultrasound	• No treatment residuals	• Limited supporting data • Potential toxin release	• Limited history and success	• May impact non-target organisms
Littoral Zone Restoration/ Hydroponic Floating Wetlands	• Nutrient removal - sediments • Corrects ecosystem imbalances	• Challenging to establish plants • Regular O&M	• Herbivore protection • Biomass harvesting • Community engagement	• Habitat restoration, beneficial ecological impacts

Algaecide Treatment: Preventative vs. Reactive Approach

Preventative

- Begin treatment before blooms begin
- Seasonal/temperature trigger
- Treat at regular intervals (6 weeks for H_2O_2)
- Reduced risk of T&O compounds and cyanotoxins

Reactive

- Begin treatment once bloom presents
- Larger product costs
- Higher risk of T&O compounds and cyanotoxins
- Higher potential for bloom recurrence

Overview of Common Chemical Control Methods

Strategy	Strengths	Limitations	Considerations	Impacts
Hydrogen Peroxide Algaecide	• Selective to cyanobacteria • Degrades into H_2O and O_2 • No accumulation	• No internal nutrient control • Cell lysis/toxin release if overdosed • Short residence time	• Timing to catch early growth + sunny conditions • Accurate dosing	• Potential impact to non-target species
Copper Algaecide	• Cheap and effective • Long residence time	• Blanket toxicity • Cell lysis/toxin release • Cyanos can develop tolerance • No internal nutrient control • Accumulation in sediment	• Chelated products decrease toxicity • Accurate dosing • Rebound growth	• Kills non-target species, can result in fish kills • Accumulation in water column and sediments
Lanthanum Bentonite	• Internal P binding • Long-term benefits	• Ineffective if external loading not controlled • Performance impacted by organic matter content	• Ineffective if external loading not controlled	• La ions accumulation • Potential bioaccumulation
Alum	• Internal P binding • Long-term benefits	• Ineffective if external loading not controlled • Water quality dependance (pH, alkalinity)	• Dose optimized based on available P • Avoid if sediment resuspension is frequent	• Metal ions accumulation

Conclusions

Conclusion and Recommended Actions

Building a proactive, adaptive cyanoHAB management framework for New Hampshire

Be proactive!

Implement Risk-Based Monitoring

- Adopt tiered source water monitoring protocols tailored to each system's risk level
- Establish early warning thresholds and cyanotoxin monitoring flowcharts for all 13 PWSs

Optimize Treatment Processes

- Evaluate in-plant barriers for cyanotoxin removal
- Develop system-specific treatment optimization protocols (TOPs) and response flowcharts

Invest in Source Water Management

- Prioritize preventative algaecide treatment and in-situ management over reactive approaches
- Address root causes through watershed management to reduce external nutrient loading

Legislative Update

David Meuse, NH State Representative

Community Education Update

Kim McNamara, MS, REHS - Portsmouth Health Officer

Public Comment