



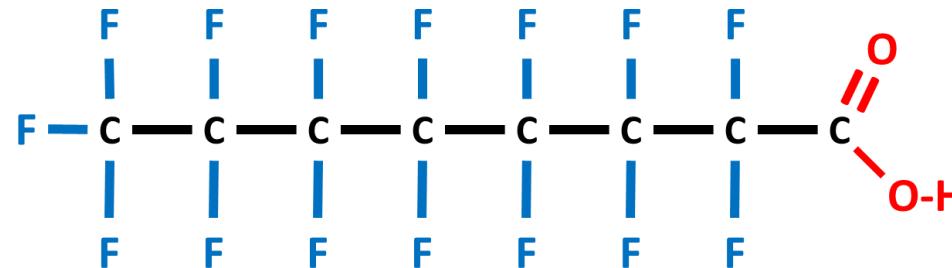
Town of Boxborough PFAS Site Investigations

Boxborough Board of Health
October 12, 2022

Mary Jude Pigsley, Regional Director, MassDEP Central Regional Office

Mark Baldi, Deputy Regional Director, Bureau of Waste Site Cleanup Central Regional Office

What Are PFAS?



Poly- and perfluoroalkyl Substances

*A family of thousand of compounds with varying structure
(e.g, carbon chain length)*

- **Extremely stable** – Heat & Stain Resistant, Water repellent
- **“Forever chemicals”** - Very persistent, do not biodegrade
- **Water Soluble**
- **Some are very toxic**
 - Slowly excreted from the body – half lives of years (1-8+ for longer-chain)
 - Developmental risks to fetus/infants
 - Endocrine disruption, effects on immune system
 - Possibly cancers (kidney, teste, pancreas, liver)

Common Uses of PFAS Since the 1950s

- Textile treatments: stain resistance/ water repellency
- Paper coatings: grease resistant
- “Waxes”: some floor, car, ski
- Hairsprays
- “Waterproof” down
- Manufacturing
- Aqueous Film-Forming Foam (AFFF)



Most Americans are exposed to some levels of PFAS through use of consumer products

What Are Exposures of Concern for PFAS?

Sensitive groups – *including pregnant women, nursing mothers and infants* – drinking (and cooking with) contaminated water in a residential setting

(sensitivity – concentration – frequency)

Water uses that pose (relatively) less concern include:

- Water use by someone not considered in “sensitive group”
- Non-residential water use – *restaurants, workplace*
- Water use for other purposes – *bathing, washing vegetables*

Ways people may reduce potential exposure:

- Drink and cook with bottled water
- Use a home water treatment system (NSF certification not yet available)

*Where does
your water
come from?*



Public water supply wells: serve 25 or more people each day, even if privately owned

Private wells: fewer than 25 people, even if publicly owned

Drinking Water and Cleanup Standards

- Cleanup standard became effective in December 2019, drinking water standard effective October 2020
- **20 parts per trillion** for the total concentration of **six PFAS compounds combined**
- The standard is health-based, protective of the most sensitive population and accounts for exposure to PFAS from sources in addition to drinking water

Public Water Supply Testing Requirements and MassDEP Assistance

- All public water systems must test for PFAS on a schedule according to size (began in October 2021 for Boxborough).
- Baker-Polito Administration budgeted money for MassDEP to provide one round of free PFAS testing to every public water system at any time until June 30, 2022, even before required deadline.
- Also provided grants to public water systems for design of PFAS treatment and added \$20m to the Clean Water Trust to provide low-interest loans for treatment plant construction

BOXBOROUGH COMMUNITY SYSTEMS

PWSID	PWS NAME	TOWN NAME	CLASS	POP	PFAS6 MCL Violation
2037001	CODMAN HILL CONDOMINIUM	BOXBOROUGH	COM	360	YES
2037002	HARVARD RIDGE CONDOMINIUM	BOXBOROUGH	COM	350	YES
2037006	CENTRE VILLAGE APARTMENTS	BOXBOROUGH	COM	36	NO
2037007	BROOK VILLAGE CONDOMINIUM	BOXBOROUGH	COM	400	YES
2037009	CARRIAGE HOUSE CONDOMINIUM	BOXBOROUGH	COM	68	YES
2037013	APPLEWOOD COMMUNITY CORPORATION	BOXBOROUGH	COM	500	YES
2037014	LIBERTY HOUSE CONDOMINIUM	BOXBOROUGH	COM	80	NO
2037036	PADDOCK ESTATES	BOXBOROUGH	COM	463	NO
2037038	ENCLAVE AT BOXBOROUGH	BOXBOROUGH	COM	25	NO

Public Notice Requirement

- MassDEP form was delivered to all residents in February 2022 to inform them of the results exceeding 20 ppt in fourth quarter of 2021
- Explained that the exceedance is a violation of the drinking water standard
- Described the health effects in general and to certain sensitive groups (pregnant and nursing women, infants, and immuno-compromised individuals)
- Provided information about steps residents could take to reduce exposure to PFAS6 in the drinking water, including using bottled water for which they would be reimbursed
- Identified the steps point of contact for questions, and links to websites for more information

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

This report contains important information about your drinking water. Please translate it or speak with someone who understands it or ask the contact listed below for a translation.

Codman Hill Condominiums located in Boxborough, Massachusetts has levels of PFAS6 above the Drinking Water Standard

What happened?

Our water system received notification of PFAS6 results showing that the well serving our water system violated the 20 nanograms per liter (ng/L) PFAS6 Maximum Contaminant Level (MCL) drinking water standard during the following quarterly compliance period(s):

Quarterly Compliance Period	Average Result (ng/L)
October – December 2021	24
January – March 2022	24.8
April – June 2022	25.1

What does this mean?

This is not an emergency. If it had been, you would have been notified immediately. Although this is not an emergency, as a consumer of the water, you have a right to know what happened, what you should do, and what we did and are doing to correct this situation.

On October 2, 2020, Massachusetts Department of Environmental Protection (MassDEP) issued a new drinking water regulation setting a maximum contaminant level (MCL) of 20 nanograms per liter (ng/L) for the sum of six per- and polyfluoroalkyl substances (called PFAS6). PFAS6 includes perfluorooctanoic acid (PFOA), perfluorooctane sulfonic acid (PFOS), perfluorononanoic acid (PFNA), perfluorohexanesulfonic acid (PFHxS), perfluorodecanoic acid (PFDA) and perfluoroheptanoic acid (PFHpA).

PFAS are man-made chemicals that have been used in the manufacturing of certain fire-fighting foams, moisture and stain resistant products, and other industrial processes. An MCL is the maximum permissible level of a contaminant in water which is delivered to any user of a public water system. **Some people who drink water containing PFAS6 in excess of the MCL may experience certain adverse effects. These could include effects on the liver, blood, immune system, thyroid, and fetal development. These PFAS6 may also elevate the risk of certain cancers.** For more information on PFAS, see the links below.

What should I do?

For consumers in a sensitive subgroup (pregnant or nursing women, infants, and people diagnosed by their health care provider to have a compromised immune system)

- **Consumers in a sensitive subgroup are advised not to consume, drink, or cook with water when the level of PFAS6 is above 20 ng/L.**
- **Consumers in a sensitive subgroup** are advised to use bottled water for drinking and cooking of foods that absorb water (like pasta).
- **For infant formula**, use bottled water or use formula that does not require adding water.
- **Bottled water should only be used if it has been tested.** The Massachusetts Department of Public Health requires companies licensed to sell or distribute bottled water or carbonated non-alcoholic beverages to test for PFAS. See <https://www.mass.gov/info-details/water-quality-standards-for-bottled-water-in-massachusetts#list-of-bottlers->

Notice of Noncompliance

- Issued on March 4, 2022
- Required actions include delivering Public Notice Materials to all residents
- Also required to develop short-term and long-term corrective actions to return to compliance. Short-term plan was to provide bottled water; long term plan was to review treatment options.



Massachusetts Department of Environmental Protection
Bureau of Water Resources – Drinking Water Program

PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) MAXIMUM CONTAMINANT LEVEL (MCL)
NOTICE OF NONCOMPLIANCE (NON)

With Violation Response/Compliance Schedule Approval (CSA) Form
M.G.L. c. 21A, § 16, 310 CMR 5.00

Attention: Public Water Supplier

A General Information

CODMAN REALTY TRUST
ATTN: ELN MANAGEMENT, MYRA MILLER
PO BOX 798
SUDSBURY, MA 01776
Email: mmiller@elnmanagement.com

CITY/TOWN: BOXBOROUGH
PWS ID #: 2037001
CLASS: COM
ENF DOC#: NONCSA-CE-22-5D00012937

B Location Where Noncompliance Occurred

Codman Hill Condominium – 276 Codman Hill Rd, Boxborough, MA
Sample Location – Well #1 Finished Water (01G)

C Description of Violations under M.G.L. c. 111, §§159-160 and 310 CMR 22.00

The Department of Environmental Protection (MassDEP) Drinking Water Program has determined that you are in violation of the Per- and Polyfluoroalkyl Substances (PFAS) Rule for the following checked contaminant(s) and monitoring period(s):

Table 1- PFAS 6

	Contaminant	Monitoring Period(s)	PFAS6 Quarterly Average (ng/L) Well 2	PFAS6 MCL (ng/L)
<input checked="" type="checkbox"/>	Per- and Polyfluoroalkyl Substances - PFAS6 (sum of the concentrations of PFOS, PFOA, PFHxS, PFNA, PFHpA and PFDA)	Oct – Dec 2021	24	20
<input checked="" type="checkbox"/>	Per- and Polyfluoroalkyl Substances - PFAS6 (sum of the concentrations of PFOS, PFOA, PFHxS, PFNA, PFHpA and PFDA)	Jan – Mar 2022	25	20

Below is a description of the regulation(s) you have violated.

PFAS6 - MAXIMUM CONTAMINANT LEVEL

Your public water system violated the maximum contaminant level (MCL) specified in 310 CMR 22.07G(3)(d) for PFAS6 and monitoring period(s) listed in Table 1 above.

D Action to Be Taken, and the Deadline for Taking Such Action

Within 30 days of the date of this NON, submit to MassDEP for its review and approval a written proposal setting forth how and when you propose to come into compliance with the requirements cited in Section C of this NON, by completing and submitting the attached PFAS Response/Compliance Schedule Approval Form ("compliance plan") and conducting all required public notice. To return to compliance, you must implement the compliance plan, including the schedule for completing the activities proposed, as approved by MassDEP. If you determine that you need additional time to complete and submit the compliance plan, you may request an extension before the submission deadline by contacting Robert Bostwick at 508-849-4036 or by email at Robert.Bostwick@mass.gov.

Information Available on mass.gov website

Energy & Environmental Affairs Data Portal (state.ma.us)

Mass.gov | Executive Office of Energy & Environmental Affairs (EEA) An official application of the Commonwealth of Massachusetts

Energy & Environmental Affairs Data Portal

HOME DASHBOARDS SEARCH DATA ▾ HELP ▾



EEA Environmental Datasets

Permits >	Facilities >	Inspections >	Enforcements >
Asbestos >	Drinking Water >	Lead & Copper in Schools/Childcare >	Waste Site Cleanup Professionals (LSP Board) >
Wetland Notice of Intent Projects >	Waste Site / Reportable Releases >	Well Drilling >	Wastewater NPDES & Residuals PFAS >

Drinking Water > ←

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 **Energy & Environmental Affairs
Data Portal**

HOME

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SEARCH DATA ▾

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Search for Drinking Water

PWS ID ?

2037001

Town ?

Select

Contaminant Group ?

Select

Raw OR Finished ?

Select

◀ PREVIOUS

✖ CLEAR

PWS Name ?

Class ?

Select

Chemical Name ?

PFAS6

Collected Date ?

to  

SEARCH 





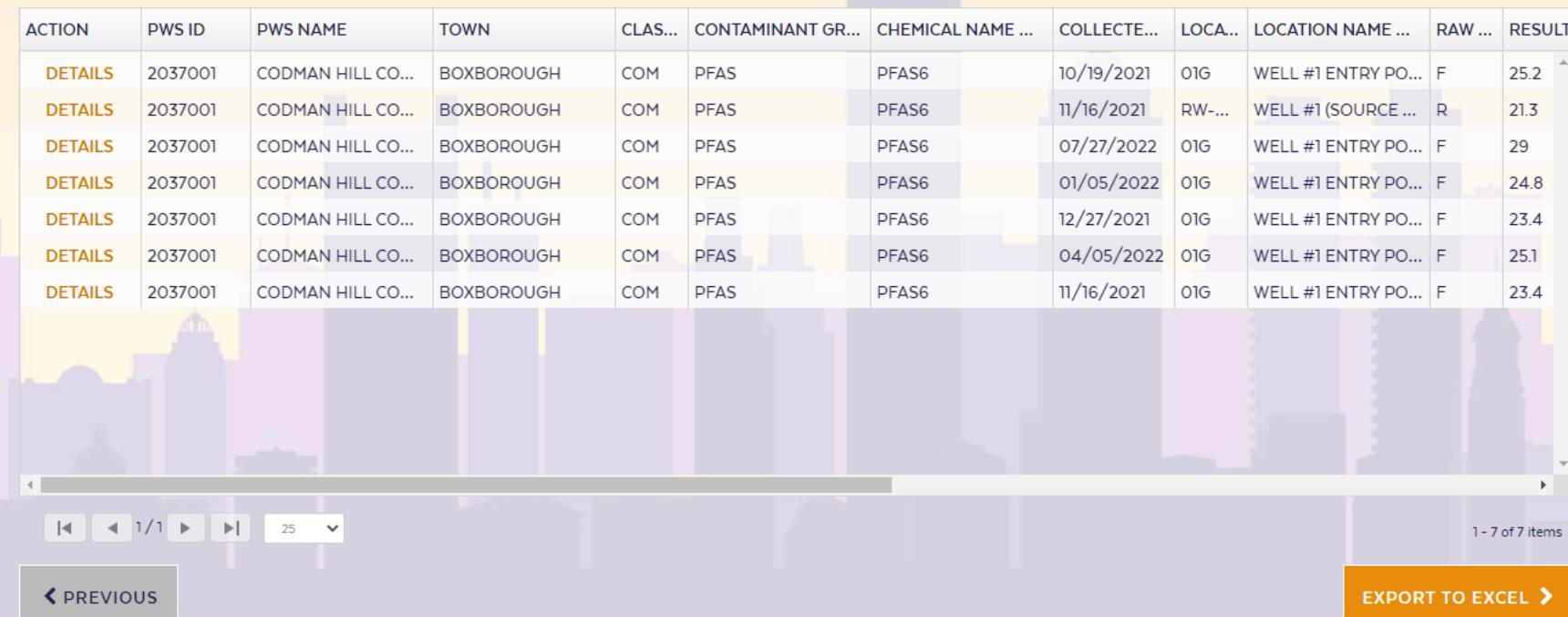
Search for Drinking Water Results

Search Criteria PWS ID: 2037001 Chemical Name: PFAS6

A set of small, light-gray navigation icons typically found in data grid interfaces, including arrows for navigation and a magnifying glass for search.

1 - 7 of 7 items

ACTION	PWS ID	PWS NAME	TOWN	CLAS...	CONTAMINANT GR...	CHEMICAL NAME ...	COLLECTE...	LOCA...	LOCATION NAME ...	RAW ...	RESULT
DETAILS	2037001	CODMAN HILL CO...	BOXBOROUGH	COM	PFAS	PFAS6	10/19/2021	01G	WELL #1 ENTRY PO...	F	25.2
DETAILS	2037001	CODMAN HILL CO...	BOXBOROUGH	COM	PFAS	PFAS6	11/16/2021	RW...	WELL #1(SOURCE ...	R	21.3
DETAILS	2037001	CODMAN HILL CO...	BOXBOROUGH	COM	PFAS	PFAS6	07/27/2022	01G	WELL #1 ENTRY PO...	F	29
DETAILS	2037001	CODMAN HILL CO...	BOXBOROUGH	COM	PFAS	PFAS6	01/05/2022	01G	WELL #1 ENTRY PO...	F	24.8
DETAILS	2037001	CODMAN HILL CO...	BOXBOROUGH	COM	PFAS	PFAS6	12/27/2021	01G	WELL #1 ENTRY PO...	F	23.4
DETAILS	2037001	CODMAN HILL CO...	BOXBOROUGH	COM	PFAS	PFAS6	04/05/2022	01G	WELL #1 ENTRY PO...	F	25.1
DETAILS	2037001	CODMAN HILL CO...	BOXBOROUGH	COM	PFAS	PFAS6	11/16/2021	01G	WELL #1 ENTRY PO...	F	23.4

A faint, semi-transparent background image of a city skyline with various buildings and landmarks, including a bridge, set against a light blue gradient.

A set of small, light-gray navigation icons typically found in data grid interfaces, including arrows for navigation and a magnifying glass for search.

1 - 7 of 7 items

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EXPORT TO EXCEL ▶

U.S. EPA Updated Health Advisories

June 2022

- Interim Updated Drinking Water Health Advisories for PFOA and PFOS are non-regulatory and non-enforceable
- Based on lifetime of exposure, some negative health effects may occur with concentrations of PFOA and PFOS near zero
- Also Final Health Advisories for two other PFAS compounds (PFBS and GenX chemicals)
- EPA plans to propose a national drinking water standard this fall which may include additional PFAS compounds

MassDEP/UMass Free Private Well Sampling Program in Boxborough

- MassDEP does not regulate private wells; no PFAS6 testing requirements for homeowners
- However, MassDEP's funding also included free testing of a limited number of private wells in 84 towns where more than 60% of the residents get their water from private wells
- The deadline for signups was April 8th; 42 Boxborough residents participated in the program
- Results are not available through the portal

Private Well Contamination Cleanup: General Laws Chapter 21E

- Any location where hazardous materials were deposited, stored, placed, disposed of, or have otherwise come to be located is a “Site”
- The owners, operators, persons who brought hazardous materials or arranged for materials to go to a Site are responsible to clean up to a condition of No Significant Risk
- Privatized program requires Responsible Parties to hire a Licensed Site Professional to implement the cleanup subject to review by MassDEP

MASSACHUSETTS CONTINGENCY PLAN

310 CMR 40.000 (MCP)

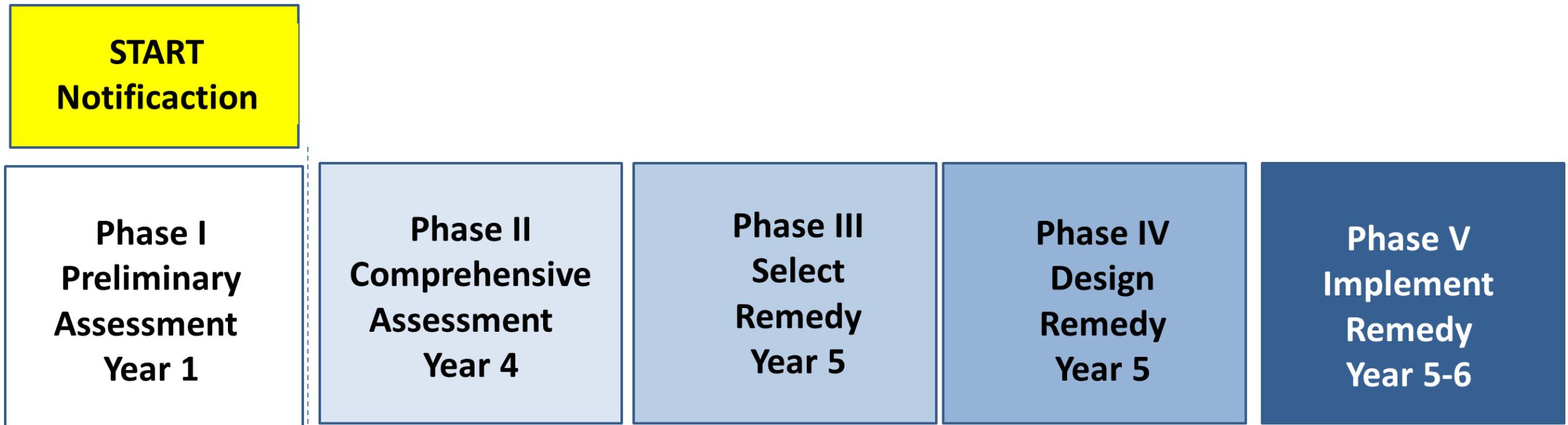
- Contamination detected in a private well = Immediate Response Action (IRA)
- IRAs must eliminate, prevent, mitigate contamination in a home private well
- Alternatives include bottled water, well treatment, and public water if feasible

MASSACHUSETTS CONTINGENCY PLAN

310 CMR 40.000

- The site LSP performs site assessment and selects cleanup remedy
- Many sites achieve closure within 1 year
- Complex sites have up to 6 years to close or implement long-term cleanup
- MassDEP ensures IRAs are being performed properly and audits other cleanup actions

MCP PROCESS



- IRA GOAL IS TO CONTROL DRINKING WATER EXPOSURE TO PFAS6

- LONG-TERM REMEDIAL GOAL = DRINKING WATER STANDARD OF 20 NG/L PFAS6

Permanent Solution or
Long-Term Cleanup

2021 Public Well Sampling Massachusetts Ave

- January 2021 several public water systems sampled under the MassDEP free program, including the UCC Boxborough at 723 Mass Ave and the Carriage House Condominiums at 773 Mass Ave
- The Carriage House result from a sample taken on January 11th was 78 ppt
- The UCC Boxborough result from a sample taken on January 18th was 43 ppt
- Both results were confirmed by MassDEP and shared by the Drinking Water Program with the Waste Site Cleanup Program

MASSDEP INVESTIGATION

- Private wells identified within 500 feet of United Church and Carriage House for sampling.
- MassDEP staff contacts homeowners in March 2021 to encourage enrolling in UMass sampling program.
- MassDEP staff sample 22 homes from September to December 2021. 10 properties decline to be sampled.
- MassDEP installs point-of-entry treatment (POET) systems in 2 homes with PFAS6 exceeding 90 ppt.

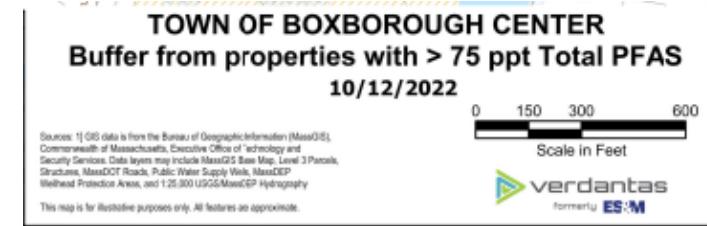
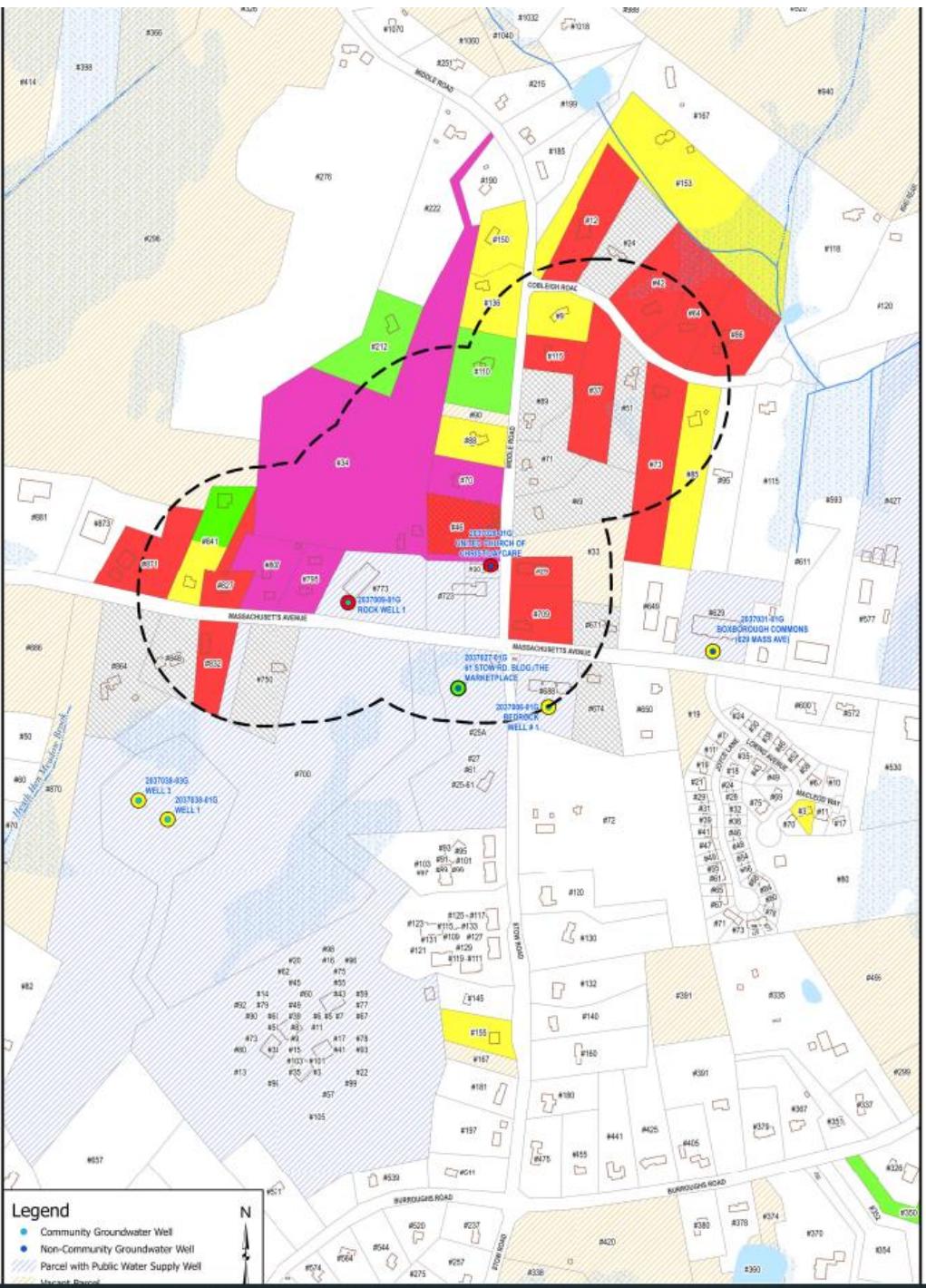
RESPONSE ACTION CHRONOLOGY

RTN 2-0021557

- April 12, 2022: MassDEP issues Notice of Responsibility to CBK Automotive
- June 21, 2022: CBK submits written Immediate Response Action (IRA) Plan to MassDEP Click to add text
- July 8, 2022: MassDEP conditionally approves IRA Plan
- August 17, 2022: CBK submits an IRA Plan Modification and Status Report
- September 7, 2022: MassDEP conditionally approves IRA Plan Modification
- September 16, 2022: CBK submits a Financial Inability Application to MassDEP

SAMPLING RESULTS & ACTIONS

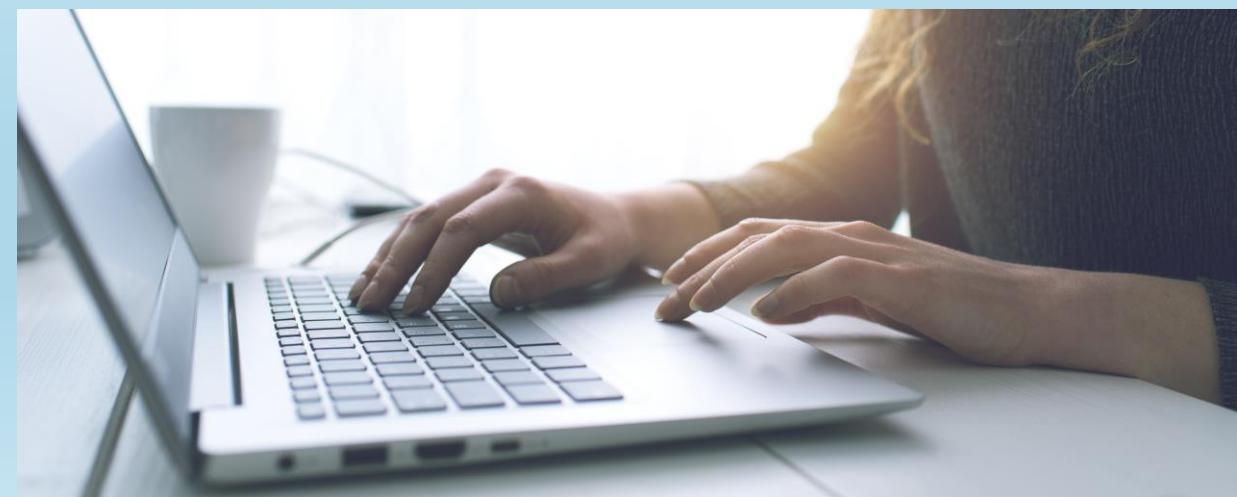
- Sampling of private wells by MassDEP and CBK Auto has found PFAS6 concentrations up to 221 ppt.
 - 4 private wells with PFAS6 concentrations exceeding 90 ppt.
 - 14 private wells with PFAS6 concentrations greater than 20 ppt, less than 90 ppt.
 - 7 private wells with PFAS6 concentrations less than 20 ppt.
 - 3 private wells with no PFAS6 detected
- CBK Auto is currently providing bottled water to 4 properties with PFAS6 concentrations greater than 20 ppt.



How to find information about the Site

On-line data portal

<https://eeaonline.eea.state.ma.us/Portal/#!/search/waste>



Energy & Environmental Affairs | + <https://eeaonline.eea.state.ma.us/portal/#/search/wastesite> A ⚡ ⚡ ⚡ ⚡ ⚡

< Mass.gov | Executive Office of Energy & Environmental Affairs (EEA) An official application of the Commonwealth of Massachusetts

Energy & Environmental Affairs Data Portal

HOME DASHBOARDS SEARCH DATA ▾ HELP ▾

Search for Waste Site & Reportable Releases

Search Type ?
Select

RTN ?
2-0021557

Compliance Status ?
Select

Site Name ?
Select

City/Town ?
Select

Address ?
Select

LSP ?
Select

◀ PREVIOUS ✕ CLEAR 🔍 SEARCH



27 10:14 AM 10/12/2022

Energy & Environmental Affairs +

https://eeonline.eea.state.ma.us/portal/#!/wastesite/2-0021557

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Energy & Environmental Affairs Data Portal

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Waste Site & Reportable Releases Information

Related links

Supporting Documents A
LSP Lookup A

Site Number ?
2-0021557

Category ?
72 HR

Site Name ?
BOXBOROUGH TOWN CENTER

AUL Info ?

Compliance Status ?
UNCLASSIFIED

Address ?
NEAR 30 MIDDLE ROAD

Compliance Date ?
04/12/2022

Town ?
BOXBOROUGH

Phase ?

Zip Code ?

RAO Class ?

Official Notification Date ?
04/12/2022

Location Type ?
MUNICIPAL,
RESIDENTIAL,PRIVPROP

Initial Status Date ?
04/12/2023

Source ?
UNKNOWN

Response Action Information

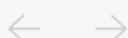
RESPONSE ACTION	STATUS	SUBMITTAL DATE	RAO CLASS	ACTIVITY & USE	LSP	LSP NUMBER

LSPs

29

10:20 AM
10/12/2022





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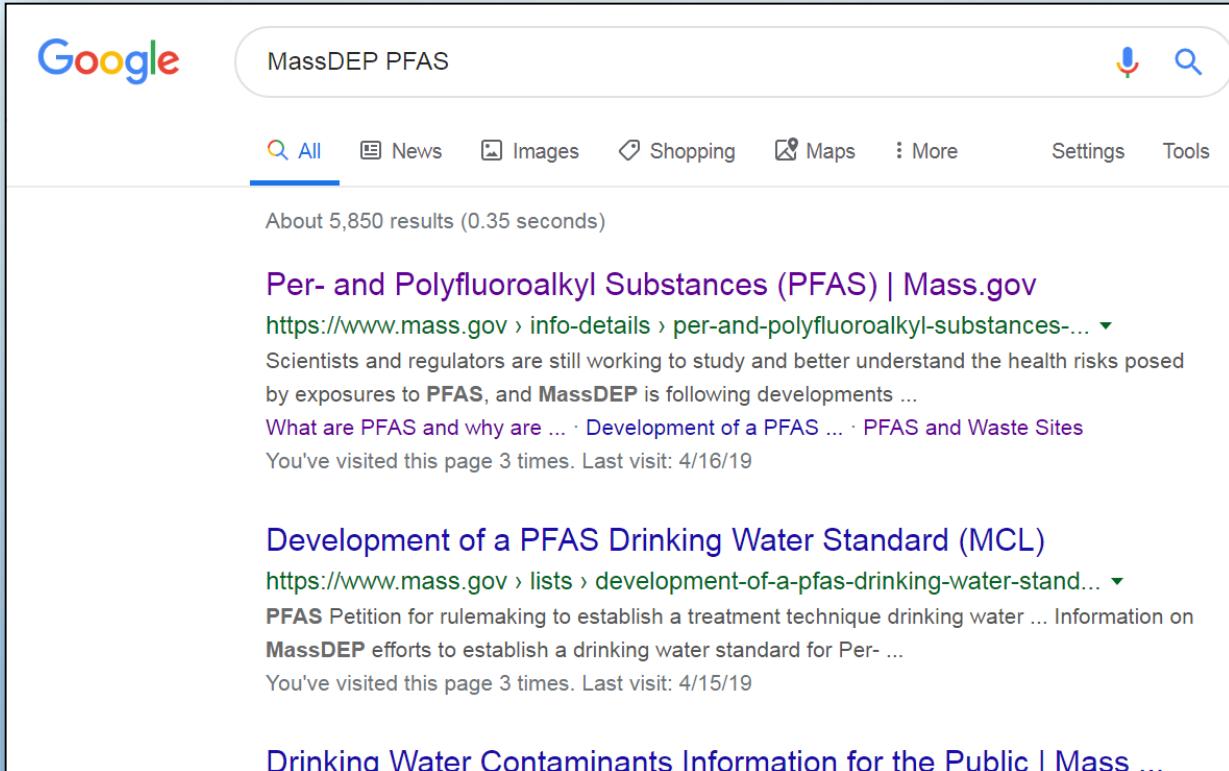
Electronically Submitted Files

RTN	Form Name	Submit Date	Attachments	Notes	Trans.ID
2-21557	BWSC101 Release Log Form- 607	4/29/2021 8:53:43 AM			1276154
2-21557	BWSC102 Release Amendment Form- 541	10/4/2021 10:19:40 AM	3 mb 2-0021557 - 34 Middle Rd POU RO - 09-24-2		1313798
2-21557	BWSC102 Release Amendment Form- 541	10/22/2021 7:15:11 AM	2 mb 2-0021557 - Boxborough - 110 -88 -Access to		1318705
2-21557	BWSC102 Release Amendment Form- 541	10/22/2021 7:15:23 AM	2 mb 2-0021557 - Boxborough - 70 - 212 - Access		1318702
2-21557	BWSC102 Release Amendment Form- 541	11/9/2021 3:54:42 PM	3 mb 2-0021557 Boxborough - 34 Middle POET Ac		1323241
2-21557	BWSC102 Release Amendment Form- 541	11/15/2021 7:29:28 PM	3 mb 2-0021557 - Boxborough - 7 Cobleigh Signed		1324665
2-21557	BWSC126 Miscellaneous Document Transmittal Form- 570	12/20/2021 12:37:25 PM	4 mb 2-0021557_Boxboro_34MiddleRoad_NOES.i		1332708
2-21557	BWSC126 Miscellaneous Document Transmittal Form- 570	12/31/2021 12:57:13 PM	15 mb 2-0021557_Boxboro_NOES_12312021.zip		1335230
2-21557	BWSC102 Release Amendment Form- 541	1/18/2022 3:07:37 PM	2 mb 2-0021557 - Boxborough - Access from 01-18		1338937
2-21557	BWSC102 Release Amendment Form- 541	1/18/2022 3:13:52 PM	10 mb 2-0021557 - Boxborough - Access from 12-18		1338989
2-21557	BWSC126 Miscellaneous Document Transmittal Form- 570	1/21/2022 8:26:45 AM	18 mb 2-0021557_Boxboro_NOES_01212022.zip		1339772

The documents viewable here include all site information submitted electronically via eDEP, and many scanned paper documents. Please note that the scanning of our paper files is not yet complete for all RTNs. However, when scanned files are available for viewing via the scanned tab for any specific RTN, it is likely that the online documents represent a complete record of publicly available documents for that specific RTN at this time. Please contact the appropriate regional office to conduct a review of site documents not yet available online.

More Information...

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About 5,850 results (0.35 seconds)

Per- and Polyfluoroalkyl Substances (PFAS) | Mass.gov
<https://www.mass.gov/info-details/...> ▾

Scientists and regulators are still working to study and better understand the health risks posed by exposures to PFAS, and MassDEP is following developments ...

What are PFAS and why are ... · Development of a PFAS ... · PFAS and Waste Sites

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Development of a PFAS Drinking Water Standard (MCL)
<https://www.mass.gov/lists/...> ▾

PFAS Petition for rulemaking to establish a treatment technique drinking water ... Information on MassDEP efforts to establish a drinking water standard for Per- ...

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Drinking Water Contaminants Information for the Public | Mass ...



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