

February 4, 2025

Chair Aron and House E&A Committee Members:

Thank you for allowing me the opportunity to provide my input in **SUPPORT** of **HB707**, *“Requiring the department of environmental services to establish a site-specific setback distance for proposed new landfills”*.

I urge the Committee to SUPPORT HB707 and provide you with a real-world example of a poorly-sited landfill gone bad, sited within the watershed of the Ammonoosuc River, while also providing a real-world example of the NH Department of Environmental Service’s failure to provide safe and adequate oversight of this facility.

I would ask the Committee members if you believe it is OK for an existing, operational landfill to continue to operate while groundwater monitoring reports have consistently shown widespread PFAS contamination of the surrounding property, as detected in numerous groundwater monitoring wells, ultimately discharging via surface water runoff directly into the Ammonoosuc River?

Swan Testing: Seep-Ammonoosuc River Discharge PFAS Detections

October 20, 2023-PFHxA, PFBS, PFOA, PFHpA

June 13, 2024-PFHxA, PFBS, PFOA, PFHpA, and PFHxS

June 27, 2024 Minor Downstream Seep #2- PFHxA, PFBS, PFOA, PFHpA

August 15, 2024-PFHxA, PFBS, PFOA, PFHpA, and PFHxS

Video: June 13, 2024 testing of NCES Landfill surface water runoff, with links to lab results:

(PFHxA, PFBS, PFOA, PFHpA, and PFHxS were detected)

Video: August 15, 2024 testing of NCES Landfill surface water runoff, with links to lab results:

(The same 5 PFAS were detected)

Limited, first-time surface water testing conducted by Sanborn Head on August 22, 2023 at NCES sample locations SF-1 and S-101 revealed detections of PFOA. The Department does not require surface water testing for PFAS at the NCES facility.

These lab results confirm that the facility is failing to contain PFAS contaminants, which are being discharged into the surrounding watershed of the Ammonoosuc River, and the river itself, as my results have confirmed. The December 7, 2023 letter from NHDES Director Wimsatt to Chair Aron even substantiates my testing of the Seep surface water discharge entering the Ammonoosuc River.

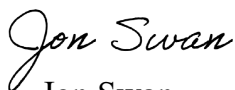
I would also add that there were 1,4-Dioxane AGQS Exceedances at the B-103S monitoring well in July, 2024 testing, and at the B-304DR monitoring well in November, 2023 testing, and at the B-304UR monitoring well in November, 2024 testing.

I have also attached the PFAS lab results from the July, 2024 NCES Tri-Annual Groundwater Monitoring Report, pages 255-261, submitted to the Department by Sanborn Head. The ongoing narrative that this ongoing, widespread site contamination is the result of the old, unlined landfill, excavated by Casella in 1993, seems highly implausible. The more logical explanation would be that Casella has built NCES atop a faulty Stage I liner system, engineered and installed prior to the purchase of the landfill from Consumat Sanco in 1993. It certainly hasn't helped that Casella spilled 150,000 gallons of leachate in 2021, or penetrated the Stage IV overlay liner 11 times over a 10-year period, from 2014 until discovery in 2024.

This is why we need a moratorium (HB171), for stronger, protective siting and setback rules, and why the House needs to inform the Department that it is opposed to another NCES being permitted next to Forest Lake State Park (HR13).

I urge the Committee to SUPPORT HB707, and request that you pressure the Department to address the ongoing, widespread contamination situation at the NCES Landfill in Bethlehem. The last thing New Hampshire needs is another PFAS contamination source, particularly when a current one is not being adequately addressed.

Thank you,

A handwritten signature in cursive script that reads "Jon Swan".

Jon Swan
Dalton, NH
603-991-2078

*In order to not get sued a third time by Casella, I need you to understand that all of this is my opinion, based on my research and experience.

INSTALLATION OF MONITORING WELLS AT THE SANCO LANDFILL

BETHLEHEM, NEW HAMPSHIRE

INTRODUCTION

The privately owned landfill in Bethlehem, N.H., has been owned and operated by SANCO, Inc. since April 1, 1983. Prior to that time the landfill was owned and operated by Mr. Harold Brown since September 2, 1976. The site was formerly used as a borrow pit by Mr. Brown before being used as a landfill. In late 1983, SANCO applied to the New Hampshire Bureau of Solid Waste Management (BSWM) for a permit to extend the vertical limits of waste placement to an elevation of 1370 feet MSL, or about thirty feet above the current contours. In a letter dated November 29, 1983, the BSWM approved this application subject to the installation and subsequent monitoring of three down-gradient and one upgradient monitoring wells.

In order to comply with the State mandate, SANCO retained The Kimball Chase Company Inc. (KCCI) of Portsmouth, NH to perform the necessary investigations and pursue the necessary approvals. KCCI retained Caswell, Eichler and Hill, Inc. (CEH) of Portsmouth, NH to complete the necessary hydrogeologic analysis and to oversee the installation of the monitoring wells. In a letter dated June 8, 1984, KCCI forwarded a proposed scope of work to SANCO which was approved.

In keeping with its contractual arrangement, CEH performed a preliminary hydrogeologic analysis of the SANCO landfill site. This work included review and analysis of existing data, reconnaissance geologic mapping, determination of ground water flow directions, and preparation of a detailed scope of work for submission to the appropriate State agencies. The results of that analysis were reported in the CEH letter of July 17, 1984 which is attached in Appendix I. The salient points of the report were two-fold. First, that the site was underlain, not universally by the coarse-grained terrace materials exposed at the surface, but rather by a wide variety of grain sizes ranging from clay to boulders with no apparent area-wide lateral continuity. Second, the apparent ground water flow direction was determined to be to the north or northeast (see Figure 1).

This information along with the detailed scope of work was forwarded to the BSWM and the New Hampshire Water Supply and Pollution Control Commission (WSPCC) with the Kimball Chase letter of July 20, 1984 (App. I). On August 15, 1984, a CEH geologist met at the SANCO site with representatives of KCCI (William Straub), SANCO (Roy Sanborn and Barry Hager), BSWM (Tom Sweeney), and WSPCC (Walter Carlson). At this time, the site was toured and the proposed scope of work discussed. Both BSWM and WSPCC gave verbal approvals of the proposed scope at that time and indicated that written confirmation would be forthcoming. As of this writing, this approval has not been received. However, the project did proceed forward based on a September 5, 1984 telephone conversation between Bill Straub and Walter Carlson verifying his approval of the scope with minor modifications. These modifications included additional well construction specifications and a change in one well location. These were incorporated into the project. Also mentioned were two seeps

Undeveloped forest land abuts the site to the north and southeast. Muchmore Road and a parcel of land which had been subject to sand and gravel mining in the past abut the site to the northeast. Within the Sanco site, the limits of an active 4-acre sanitary landfill are located approximately 100 feet northeast of the proposed landfill expansion area limits. A site plan is presented on Figure 2.

The site lies within a portion of a northerly draining 350-acre watershed which is part of the larger Ammonoosuc River watershed. The Ammonoosuc River flows in a general northwesterly direction adjacent to the site and is located approximately 400 feet northeast of the northeast corner of the site. There are no surface water drainage courses on the site.

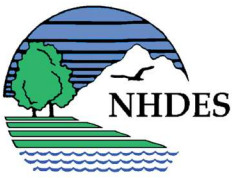
Site topographic features include several hills and plateaus with a portion of the site ground surface being altered by soil mining and landfiling activities. As shown on Figure 2, maximum topographic relief is about 55 feet with elevations ranging from approximately 1318 feet site vertical datum (SVD) in the northwest corner of the site to 1373 feet SVD in the southeast corner of the site. The site vertical datum was chosen by others to approximately mean sea level (MSL). Elevations noted hereinafter refer to "approximate" mean sea level (MSL). The existing landfill currently rises approximately 22 to 42 feet above the surrounding ground surface.

Excavations which have served as a source of daily cover for the active landfill are located within eastern portions of the proposed landfill area and extend south of the existing landfill. The areal extent of the excavations is about 5 acres. Base elevations for the excavations range from about 1318 to 1332 feet MSL. Water has ponded in isolated low areas of these excavations. Those portions of the site unaltered by soil mining or landfiling activities are either forest land or recently cleared forest land.

1.40 PROJECT DESCRIPTION

A sanitary landfill is proposed for an approximate 18-acre area southwest of the active 4-acre landfill. A brief synopsis of the proposed landfill development is presented below. Refer to the Kimball Chase design drawings for more detailed information.

The landfill will be developed in four phases progressing from east to west. Perimeter swales with appropriate erosion controls will direct most runoff around the landfill development area to a sedimentation pond abutting the northwest corner of the proposed landfill. The remainder of the runoff will flow into an exfiltration pond located northeast of the active landfill. The



The State of New Hampshire
Department of Environmental Services



Robert R. Scott, Commissioner

December 7, 2023

Representative Judy Aron, Chair

House Environment & Agriculture Committee
266 Forest Road
South Acworth, New Hampshire 03607

Subject: NCES Landfill Oversight

Dear Representative Aron,

Thank you for your November 21 email inquiry about recent detections of PFAS compounds in groundwater and surface water near the North Country Environmental Services (NCES) landfill in Bethlehem, as described in recent email communications from Mr. Jon Swan. The New Hampshire Department of Environmental Services (NHDES) understands that this topic has been of increasing interest to legislators and citizens, and we appreciate the opportunity to address it.

Regular, prescribed groundwater and surface water monitoring has been conducted at this landfill facility for four decades. The facility's permit, issued and overseen by NHDES, requires monitoring for landfill leachate indicator parameters at 47 points at and around the lined landfill facility. NHDES' team of licensed Professional Geologists and licensed Professional Engineers regularly reviews the monitoring data. Trend analysis of these analytical data do not indicate that there is a recent or ongoing release from the lined landfill. Additionally, as explained below, the PFAS detections in water from the seep do not constitute a Clean Water Act (CWA) violation.

The detected low-level concentrations of PFAS reported in Mr. Swan's email are consistent with recent sampling data on-file at NHDES from the facility and the seep location noted. These data are indicative of impacts from historic conditions at the facility, which included a former unlined landfill removed in the 1990s. In summary, Mr. Swan's data confirms the existing conceptual site model. More simply stated, the data are consistent with previously collected data and do not suggest a new, undiscovered release.

Landfill leachate is an aqueous mixture of contaminants and breakdown products from waste in the landfill that liquid has been in contact with over time. As a result, laboratory analysis of landfill leachate typically indicates the presence of high concentrations of various chemicals and compounds, including PFAS, metals, volatile organic compounds (VOCs), etc. Impacts to groundwater or surface water from a recent or active release of landfill leachate would result in the detection of a broad spectrum of landfill leachate indicator parameters at high concentrations at monitoring points adjacent to the landfill. Available information about site conditions at NCES in NHDES' files, which include a large volume of analytical data from a multitude of sampling locations, do not suggest a recent or active release of landfill leachate.

The "main seep" and the other seeps identified along the Ammonoosuc River near the facility are of natural origin and were not constructed or manufactured drainage features of the landfill. They are considered to be the outward expression of groundwater, where groundwater seeps to the surface,

www.des.nh.gov

PO Box 95, 29 Hazen Drive, Concord, NH 03302-0095

Telephone: (603) 271-2905 Fax: (603) 271-2456 TDD Access: Relay NH 1-800-735-2964

Representative Judy Aron,
Chair, House Environment & Agriculture Committee
December 7, 2023
Page 2 of 2

NHDES has required these seeps to be monitored for landfill leachate indicator parameters for many years. Detections of landfill leachate indicator parameters in samples from the surface water seeps have been attributed to the unlined landfill that was removed from the facility in the 1990s and which predated the lined landfill. Since removal of the unlined landfill, concentrations of contaminants in groundwater and at the seeps have decreased significantly over time. PFAS, as an emerging contaminant, has only been sampled and analyzed for at the site in general since 2017; as such the historical record is limited in comparison to other landfill leachate indicator parameters which have been monitored at the site in some cases since the 1980's and early 1990s. PFAS compounds are exceptionally resistant to degradation and persist in the groundwater environment. They have been frequently detected at low concentrations in groundwater in many locations across the state; and due to their history of production and use, dating back over 70 years, they have been detected in groundwater at many closed unlined landfills.

NHDES has assessed the seeps relative to the Clean Water Act, and the PFAS concentrations detected do not constitute a CWA violation. Note also that recent sampling and analysis conducted of surface water at three sampling stations in the Ammonoosuc River channel near the landfill showed no detection of PFAS. At this time there are no surface water quality standards for PFAS. However, in the future, NHDES may adopt the four existing NH PFAS drinking water Maximum Contaminant Levels (MCLs) as surface water criteria. In that case, if approved by U.S. EPA, those criteria would become applicable, for CWA purposes, to surface water discharges located within 20-miles upstream of any active surface water intake used as a public drinking water supply. We note that the area of the seeps is approximately 30 miles upstream of any active surface water intake used as a drinking water supply and therefore the criteria would not be applicable.

NHDES formally responded to NCES' recent submittals of groundwater and surface water quality data in a letter dated November 7, 2023 (<https://www4.des.state.nh.us/DocViewer/?ContentId=5130124>). That letter included a request for further hydrogeological investigations in order to further our understanding of conditions in this area of the landfill. Our geologists and engineers will continue to monitor and evaluate the analytical data regularly collected at NCES under the facility's permit as well as data from these and other required investigations into residual impacts from historic incidents at the facility and the former unlined landfill. Under the existing rules and statutes, we have authority to require additional investigation and remediation if warranted.

Thank you again for your inquiry and interest in this important topic. If you have any questions regarding this letter, please do not hesitate to contact me.

Sincerely yours,



Michael J. Wimsatt, Director
Waste Management Division

Waste
Management
Division

Waste Management
Division
2023.12.08 08:21:45
-05'00'

NOTES

1. THE AERIAL IMAGERY OUTSIDE THE LANDFILL LIMIT OF WASTE WAS OBTAINED FROM GOOGLE EARTH DATED OCTOBER 2022. AERIAL IMAGE INSIDE THE LANDFILL LIMIT OF WASTE WAS TAKEN ON JUNE 13, 2024 AND PROVIDED BY CMA.

2. TOPOGRAPHY INSIDE THE ACTIVE AREA WAS OBTAINED FROM AN JULY 2024 SURVEY.

3. THE LIMITS OF THE GMZ ARE BASED ON AN OCTOBER 2017 PLAN PREPARED BY HORIZONS ENGINEERING, INC. ENTITLED "GROUND WATER MANAGEMENT ZONE PLAN FOR LANDS OF NORTH COUNTRY ENVIRONMENTAL SERVICES, INC. AND FOREST ACQUISITIONS, INC."

LEGEND

- FACILITY MONITORING WELL
- SURFACE WATER SAMPLING LOCATION
- U/S INDICATES UPPER/SHALLOW WELL
- M INDICATES SCREEN AT MIDDLE INTERVAL BETWEEN UPPER AND LOWER SCREENS
- D/L INDICATES DEEPER, LOWER WELL
- R INDICATES REPLACEMENT WELL
- PIEZOMETER
- STAFF GAUGE
- RIP-RAP STONE
- LIMIT OF WETLAND DELINEATION
- GROUNDWATER MANAGEMENT ZONE
- TOWN OF BETHLEHEM ZONING LINE
- PROPERTY LINE



TABLE B.1

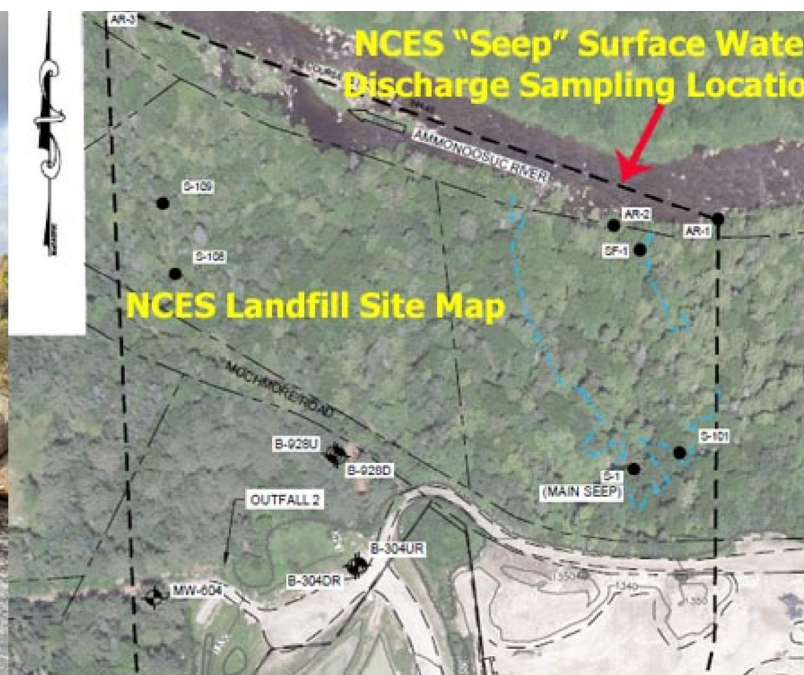
Summary of PFAS Surface Water Analytical Results

North Country Environmental Services, Inc.

Bethlehem, New Hampshire

Permit No. GWP-198704033-B-008

Sample Location	Sample Date	Sample Type	Concentrations in ng/L				
			Perfluoroalkyl Carboxylic Acids		Perfluoroalkyl Sulfonic Acids		Total of Regulated PFAS
			Perfluorooctanoic Acid (PFOA) [7]	Perfluorononanoic Acid (PFNA) [8]	Perfluorohexanesulfonic Acid (PFHxS) [6S]	Perfluorooctanesulfonic Acid (PFOS) [8S]	
CAS Number			335-67-1	375-95-1	355-46-4	1763-23-1	-
GW-1 (AGQS)			12	11	18	15	
Seep S-1	08-22-2023	N	<1.92	<1.54	<1.4	<1.43	ND
SF-1	08-22-2023	N	3.70	<1.52	<1.39	<1.42	3.70
AR-1	08-22-2023	N	<1.92	<1.54	<1.4	<1.43	ND
AR-2	08-22-2023	N	<1.93	<1.54	<1.41	<1.44	ND
AR-3	08-22-2023	N	<1.96	<1.57	<1.43	<1.46	ND
S-101	08-22-2023	N	3.05	<1.52	<1.39	<1.42	3.05
S-108	08-22-2023	N	<1.93	<1.54	<1.41	<1.44	ND
S-109	08-22-2023	N	<1.99	<1.59	<1.45	<1.48	ND
QC FB	08-22-2023	FB	<3.76	<3.01	<2.74	<2.8	ND



October 20, 2023 NCES "Seep" Surface Water Discharge Sampling PFAS Lab Results

Parameter		Result	* Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab							Detection:
Perfluorobutanesulfonic Acid (PFBS)	PFBS	4.35		ng/l	2.00	0.617	1 4.35 ng/L
Perfluorohexanoic Acid (PFHxA)	PFHxA	4.73		ng/l	2.00	0.617	1 4.73 ng/L
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)		ND		ng/l	2.00	0.617	1
Perfluoroheptanoic Acid (PFHpA)	PFHpA	1.37	* J	ng/l	2.00	0.617	1 1.37 ng/L
Perfluorohexanesulfonic Acid (PFHxS)		ND		ng/l	2.00	0.617	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)		ND		ng/l	2.00	0.617	1
Perfluorooctanoic Acid (PFOA)	PFOA	2.39		ng/l	2.00	0.617	1 2.39 ng/L
Perfluorononanoic Acid (PFNA)		ND		ng/l	2.00	0.617	1
Perfluorooctanesulfonic Acid (PFOS)		ND		ng/l	2.00	0.617	1
Perfluorodecanoic Acid (PFDA)		ND		ng/l	2.00	0.617	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)		ND		ng/l	2.00	0.617	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)		ND		ng/l	2.00	0.617	1
Perfluoroundecanoic Acid (PFUnA)		ND		ng/l	2.00	0.617	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)		ND		ng/l	2.00	0.617	1
Perfluorododecanoic Acid (PFDoA)		ND		ng/l	2.00	0.617	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)		ND		ng/l	2.00	0.617	1
Perfluorotridecanoic Acid (PFTTrDA)		ND		ng/l	2.00	0.617	1
Perfluorotetradecanoic Acid (PFTA)		ND		ng/l	2.00	0.617	1

*J Qualifier: The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL)



GRANITE STATE ANALYTICAL SERVICES, LLC.

22 Manchester Road, Unit 2, Derry, NH 03038
Phone (800) 699-9920 | (603) 432-3044 website www.granitestateanalytical.com

CERTIFICATE OF ANALYSIS FOR DRINKING WATER

DATE PRINTED: 11/09/2023

CLIENT NAME: Jon Swan

CLIENT ADDRESS: Ammonoosuc River SEEP
Bethlehem, NH 03574

SAMPLE ID #: 2310-04700-001

SAMPLED BY: Jon Swan

SAMPLE ADDRESS: Jon Swan
Ammonoosuc River SEEP
Bethlehem NH 03574

Legend	
Passes	✓
Fails EPA Primary	✗
Fails EPA Secondary	⚠
Fails State Guideline	✗
Attention	⚠

DATE AND TIME COLLECTED: 10/20/2023 10:00AM

DATE AND TIME RECEIVED: 10/20/2023 02:09PM

ANALYSIS PACKAGE: PFC-18-NoFB-alpha-NH

RECEIPT TEMPERATURE: ON ICE 7.8° CELSIUS

CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic Acid*	<2.00	ng/L			2.00	No Limit	EPA 537.1	2062	11/01/2023 04:29PM
4,8-dioxa-3H-perfluorononanoic acid*	<2.00	ng/L			2.00	No Limit	EPA 537.1	2062	11/01/2023 04:29PM
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid*	<2.00	ng/L			2.00	No Limit	EPA 537.1	2062	11/01/2023 04:29PM
Date Extracted	-					No Limit	EPA 537.1	2062	11/01/2023 12:24AM
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	2062	11/01/2023 04:29PM
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	2062	11/01/2023 04:29PM
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	2062	11/01/2023 04:29PM
Perfluorobutanesulfonic Acid (PFBS)*	4.35	ng/L			2.00	No Limit	EPA 537.1	2062	11/01/2023 04:29PM
Perfluorodecanoic Acid (PFDA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	2062	11/01/2023 04:29PM
Perfluorododecanoic Acid (PFDoA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	2062	11/01/2023 04:29PM
Perfluoroheptanoic Acid (PFHpA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	2062	11/01/2023 04:29PM
Perfluorohexanesulfonic Acid (PFHxS)*	<2.00	ng/L	✓		2.00	18 ng/L	EPA 537.1	2062	11/01/2023 04:29PM
Perfluorohexanoic Acid (PFHxA)*	4.73	ng/L			2.00	No Limit	EPA 537.1	2062	11/01/2023 04:29PM



Donald A. D'Anjou

Donald A. D'Anjou, Ph. D.
Laboratory Director



GRANITE STATE ANALYTICAL SERVICES, LLC.

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Phone (800) 699-9920 | (603) 432-3044 website www.granitestateanalytical.com

CERTIFICATE OF ANALYSIS FOR DRINKING WATER

DATE PRINTED: 11/09/2023
CLIENT NAME: Jon Swan
CLIENT ADDRESS: Ammonoosuc River SEEP
Bethlehem, NH 03574
SAMPLE ID #: 2310-04700-001
SAMPLED BY: Jon Swan
SAMPLE ADDRESS: Jon Swan
Ammonoosuc River SEEP
Bethlehem NH 03574

Legend	
Passes	✓
Fails EPA Primary	⊗
Fails EPA Secondary	⚠
Fails State Guideline	✗
Attention	⚠

DATE AND TIME COLLECTED: 10/20/2023 10:00AM
DATE AND TIME RECEIVED: 10/20/2023 02:09PM
ANALYSIS PACKAGE: PFC-18-NoFB-alpha-NH
RECEIPT TEMPERATURE: ON ICE 7.8° CELSIUS

CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
Perfluorononanoic Acid (PFNA)*	<2.00	ng/L	✓		2.00	11 ng/L	EPA 537.1	2062	11/01/2023 04:29PM
Perfluorooctanesulfonic Acid (PFOS)*	<2.00	ng/L	✓		2.00	15 ng/L	EPA 537.1	2062	11/01/2023 04:29PM
Perfluorooctanoic Acid (PFOA)*	2.39	ng/L	✓		2.00	12 ng/L	EPA 537.1	2062	11/01/2023 04:29PM
Perfluorotetradecanoic Acid (PFTA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	2062	11/01/2023 04:29PM
Perfluorotridecanoic Acid (PFTDA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	2062	11/01/2023 04:29PM
Perfluoroundecanoic Acid (PFUNA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	2062	11/01/2023 04:29PM




Donald A. D'Anjou, Ph. D.
Laboratory Director

Project Name: RESIDENTIAL

Lab Number: L2362688

Project Number: 2310-04700

Report Date: 11/02/23

SAMPLE RESULTS

Lab ID: L2362688-01
 Client ID: 2310-04700-001
 Sample Location: NH

Date Collected: 10/20/23 10:00
 Date Received: 10/20/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 133,537.1
 Analytical Date: 11/01/23 16:29
 Analyst: CAP

Extraction Method: EPA 537.1
 Extraction Date: 11/01/23 00:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	4.35		ng/l	2.00	0.617	1
Perfluorohexanoic Acid (PFHxA)	4.73		ng/l	2.00	0.617	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	2.00	0.617	1
Perfluoroheptanoic Acid (PFHpA)	1.37	J	ng/l	2.00	0.617	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.617	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	0.617	1
Perfluorooctanoic Acid (PFOA)	2.39		ng/l	2.00	0.617	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.617	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.617	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.617	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	0.617	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.617	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.617	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.617	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.617	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	0.617	1
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	2.00	0.617	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.617	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	104		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	100		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	95		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	91		70-130



GRANITE STATE ANALYTICAL SERVICES, LLC.

2541 White Mountain Highway, Unit 7, North Conway, NH 03860
Phone (603) 447-4826 website www.granitestateanalytical.com

Laboratory Report

Jon Swan
saveforelake@yahoo.com

Date Printed: 06/19/2024
Work Order #: 2406-02982
Client Job #:
Date Received: 06/13/2024
Sample collected in: New Hampshire

Attached please find results for the analysis of the samples received on the date referenced above.

Unless otherwise noted in the attached report, the analyses performed met the requirements of the analyzing laboratory's Quality Assurance Plan, Standard Operating Procedures and State Accreditation. This certificate shall not be reproduced, except in full, without the written approval of the analyzing laboratory. The results presented in this report relate to the samples listed on the following pages in the condition in which they were received. Accreditation for each analyte is identified by the * symbol following the analyte name. Location of our analyzing laboratory is identified by the code in the Analyst Column.

A & L Laboratory:
Identified by ME in Analyst Column
155 Center Street, Auburn, Maine 04210
www.allaboratory.com

Granite State Analytical Services LLC:
Identified by NH in Analyst Column
22 Manchester Road, Derry, NH 03038
www.granitestateanalytical.com

Nashoba Analytical:
Identified by MA in the Analyst Column
31A Willow Road, Ayer, MA 01432
www.nashobaanalytical.com

ANALYSIS RELATED NOTES:

- RL: "Reporting limit" means the lowest level of an analyte that can be accurately recovered from the matrix of interest.
- DF: "Dilution factor" means the ratio of the volume of the sample to the volume of the final (dilute) solution.
- MDL: "Minimum Detection Limit" means the minimum result which can be reliably discriminated from a blank with a predetermined confidence level.
- A & L Laboratory / Granite State Analytical Services LLC / Nashoba Analytical. accreditation lists can be found on our websites listed above.
- Subcontracted samples will be identified by the Accreditation number of the subcontract laboratory in the analyst field for each analyte and the appropriate laboratory will be listed here. **None**
- Data Qualifiers (DQ) Flags provide additional information in regards to the receipt, analysis or quality control of a sample. These are indicated under the DQ Flags Column on your report and listed here if necessary: **Data Qualifier (DQ) Flags: J = Estimated concentration.**

SAMPLE STATE SPECIFIC NOTES:

Additional Narrative or Comments: **None**

We appreciate the opportunity to provide you with laboratory services. If you have any questions regarding the enclosed report, please contact the laboratory and we will be happy to assist you.



Donald A. D'Anjou, Ph. D.
Laboratory Director

A & L Laboratory: Accreditations: Maine ME00021, New Hampshire 2501, Maine Radon Registration ID # SPC20
Granite State Analytical Services, LLC: Accreditations: New Hampshire 1015; Maine NH00003;
Massachusetts M-NH0003; Rhode Island 101513; Vermont VT-101507
Nashoba Analytical: Accreditations: Massachusetts M-MA1118



GRANITE STATE ANALYTICAL SERVICES, LLC.

2541 White Mountain Highway, Unit 7, North Conway, NH 03860
Phone (603) 447-4826 website www.granitestateanalytical.com

CERTIFICATE OF ANALYSIS FOR DRINKING WATER

DATE PRINTED: 06/19/2024
CLIENT NAME: Jon Swan
CLIENT ADDRESS: saveforestlake@yahoo.com

SAMPLE ID #: 2406-02982-001
SAMPLED BY: Jon Swan
SAMPLE ADDRESS: Jon Swan/Ammo River
NCES Landfill SEEP
Bethlehem NH

Legend	
Passes	✓
Fails EPA Primary	✗
Fails EPA Secondary	⚠
Fails State Guideline	✗
Attention	⚠

DATE AND TIME COLLECTED: 06/13/2024 09:30AM
DATE AND TIME RECEIVED: 06/13/2024 12:00PM
ANALYSIS PACKAGE: PFAS-537.1-18-NH
RECEIPT TEMPERATURE: 18° CELSIUS

CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11CI-PF30UdS)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	06/17/2024 09:20PM
4,8-dioxa-3H-perfluorononanoic acid (ADONA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	06/17/2024 09:20PM
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9CI-PF30NS)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	06/17/2024 09:20PM
Date Extracted	-					No Limit	EPA 537.1	DL-NH	06/17/2024 08:10AM
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	06/17/2024 09:20PM
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	06/17/2024 09:20PM
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	06/17/2024 09:20PM
Perfluorobutanesulfonic Acid (PFBS)*	5.18	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	06/17/2024 09:20PM
Perfluorodecanoic Acid (PFDA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	06/17/2024 09:20PM
Perfluorododecanoic Acid (PFDoA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	06/17/2024 09:20PM
Perfluoroheptanoic Acid (PFHpA)*	2.22	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	06/17/2024 09:20PM
Perfluorohexanesulfonic Acid (PFHxS)*	0.866	ng/L	✓	J	2.00	18 ng/L	EPA 537.1	JLR-NH	06/17/2024 09:20PM




Donald A. D'Anjou, Ph. D.
Laboratory Director



GRANITE STATE ANALYTICAL SERVICES, LLC.

2541 White Mountain Highway, Unit 7, North Conway, NH 03860
Phone (603) 447-4826 website www.granitestateanalytical.com

CERTIFICATE OF ANALYSIS FOR DRINKING WATER

DATE PRINTED: 06/19/2024
CLIENT NAME: Jon Swan
CLIENT ADDRESS: saveforestlake@yahoo.com

SAMPLE ID #: 2406-02982-001
SAMPLED BY: Jon Swan
SAMPLE ADDRESS: Jon Swan/Ammo River
NCES Landfill SEEP
Bethlehem NH

Legend	
Passes	✓
Fails EPA Primary	⊗
Fails EPA Secondary	⚠
Fails State Guideline	✗
Attention	⚠

DATE AND TIME COLLECTED: 06/13/2024 09:30AM
DATE AND TIME RECEIVED: 06/13/2024 12:00PM
ANALYSIS PACKAGE: PFAS-537.1-18-NH
RECEIPT TEMPERATURE: 18° CELSIUS

CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
Perfluorohexanoic Acid (PFHxA)*	6.49	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	06/17/2024 09:20PM
Perfluorononanoic Acid (PFNA)*	<2.00	ng/L	✓		2.00	11 ng/L	EPA 537.1	JLR-NH	06/17/2024 09:20PM
Perfluorooctanesulfonic Acid (PFOS)*	<2.00	ng/L	✓		2.00	15 ng/L	EPA 537.1	JLR-NH	06/17/2024 09:20PM
Perfluorooctanoic Acid (PFOA)*	2.97	ng/L	✓		2.00	12 ng/L	EPA 537.1	JLR-NH	06/17/2024 09:20PM
Perfluorotetradecanoic Acid (PFTA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	06/17/2024 09:20PM
Perfluorotridecanoic Acid (PFTDA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	06/17/2024 09:20PM
Perfluoroundecanoic Acid (PFUNA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	06/17/2024 09:20PM
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NETFOSSA)	102	%	✓			70-130%	EPA 537.1 - SS	JLR-NH	06/17/2024 09:20PM
Perfluoro-n-[1,2-13C2]decanoic Acid (13C2-PFDA)	111	%	✓			70-130%	EPA 537.1 - SS	JLR-NH	06/17/2024 09:20PM
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C2-PFHxA)	103	%	✓			70-130%	EPA 537.1 - SS	JLR-NH	06/17/2024 09:20PM
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic Acid (13C3-HFPO-DA)	94	%	✓			70-130%	EPA 537.1 - SS	JLR-NH	06/17/2024 09:20PM




Donald A. D'Anjou, Ph. D.
Laboratory Director



GRANITE STATE ANALYTICAL SERVICES, LLC.

2541 White Mountain Highway, Unit 7, North Conway, NH 03860
Phone (603) 447-4826 website www.granitestateanalytical.com

Laboratory Report

Jon Swan
saveforelake@yahoo.com

Date Printed: 07/08/2024
Work Order #: 2406-06084
Client Job #:
Date Received: 06/27/2024
Sample collected in: New Hampshire

Attached please find results for the analysis of the samples received on the date referenced above.

Unless otherwise noted in the attached report, the analyses performed met the requirements of the analyzing laboratory's Quality Assurance Plan, Standard Operating Procedures and State Accreditation. This certificate shall not be reproduced, except in full, without the written approval of the analyzing laboratory. The results presented in this report relate to the samples listed on the following pages in the condition in which they were received. Accreditation for each analyte is identified by the * symbol following the analyte name. Location of our analyzing laboratory is identified by the code in the Analyst Column.

A & L Laboratory:
Identified by ME in Analyst Column
155 Center Street, Auburn, Maine 04210
www.allaboratory.com

Granite State Analytical Services LLC:
Identified by NH in Analyst Column
22 Manchester Road, Derry, NH 03038
www.granitestateanalytical.com

Nashoba Analytical:
Identified by MA in the Analyst Column
31A Willow Road, Ayer, MA 01432
www.nashobaanalytical.com

ANALYSIS RELATED NOTES:

- RL: "Reporting limit" means the lowest level of an analyte that can be accurately recovered from the matrix of interest.
- DF: "Dilution factor" means the ratio of the volume of the sample to the volume of the final (dilute) solution.
- MDL: "Minimum Detection Limit" means the minimum result which can be reliably discriminated from a blank with a predetermined confidence level.
- A & L Laboratory / Granite State Analytical Services LLC / Nashoba Analytical. accreditation lists can be found on our websites listed above.
- Subcontracted samples will be identified by the Accreditation number of the subcontract laboratory in the analyst field for each analyte and the appropriate laboratory will be listed here. **None**
- Data Qualifiers (DQ) Flags provide additional information in regards to the receipt, analysis or quality control of a sample. These are indicated under the DQ Flags Column on your report and listed here if necessary: **Data Qualifier (DQ) Flags: J = Estimated concentration.**

SAMPLE STATE SPECIFIC NOTES:

Additional Narrative or Comments: **None**

We appreciate the opportunity to provide you with laboratory services. If you have any questions regarding the enclosed report, please contact the laboratory and we will be happy to assist you.



Donald A. D'Anjou, Ph. D.
Laboratory Director

A & L Laboratory: Accreditations: Maine ME00021, New Hampshire 2501, Maine Radon Registration ID # SPC20
Granite State Analytical Services, LLC: Accreditations: New Hampshire 1015; Maine NH00003;
Massachusetts M-NH0003; Rhode Island 101513; Vermont VT-101507
Nashoba Analytical: Accreditations: Massachusetts M-MA1118



GRANITE STATE ANALYTICAL SERVICES, LLC.

2541 White Mountain Highway, Unit 7, North Conway, NH 03860
Phone (603) 447-4826 website www.granitestateanalytical.com

CERTIFICATE OF ANALYSIS FOR DRINKING WATER

DATE PRINTED: 07/08/2024
CLIENT NAME: Jon Swan
CLIENT ADDRESS: saveforestlake@yahoo.com

SAMPLE ID #: 2406-06084-001
SAMPLED BY: J Swan

SAMPLE ADDRESS: Jon Swan
Ammo Seep #2
Bethlehem NH

Legend	
Passes	✓
Fails EPA Primary	⊗
Fails EPA Secondary	⚠
Fails State Guideline	✕
Attention	⚡

DATE AND TIME COLLECTED: 06/27/2024 09:45AM
DATE AND TIME RECEIVED: 06/27/2024 12:34PM
ANALYSIS PACKAGE: PFAS-537.1-18-NH
RECEIPT TEMPERATURE: ON ICE 16° CELSIUS

CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11CI-PF30UdS)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	07/01/2024 03:17PM
4,8-dioxa-3H-perfluorononanoic acid (ADONA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	07/01/2024 03:17PM
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9CI-PF30NS)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	07/01/2024 03:17PM
Date Extracted	-					No Limit	EPA 537.1	JLR-NH	07/01/2024 07:49AM
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	07/01/2024 03:17PM
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	07/01/2024 03:17PM
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	07/01/2024 03:17PM
Perfluorobutanesulfonic Acid (PFBS)*	0.682	ng/L		J	2.00	No Limit	EPA 537.1	JLR-NH	07/01/2024 03:17PM
Perfluorodecanoic Acid (PFDA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	07/01/2024 03:17PM
Perfluorododecanoic Acid (PFDoA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	07/01/2024 03:17PM
Perfluoroheptanoic Acid (PFHpA)*	0.709	ng/L		J	2.00	No Limit	EPA 537.1	JLR-NH	07/01/2024 03:17PM
Perfluorohexanesulfonic Acid (PFHxS)*	<2.00	ng/L	✓		2.00	18 ng/L	EPA 537.1	JLR-NH	07/01/2024 03:17PM




Donald A. D'Anjou, Ph. D.
Laboratory Director



GRANITE STATE ANALYTICAL SERVICES, LLC.

2541 White Mountain Highway, Unit 7, North Conway, NH 03860
Phone (603) 447-4826 website www.granitestateanalytical.com

CERTIFICATE OF ANALYSIS FOR DRINKING WATER

DATE PRINTED: 07/08/2024
CLIENT NAME: Jon Swan
CLIENT ADDRESS: saveforestlake@yahoo.com

SAMPLE ID #: 2406-06084-001
SAMPLED BY: J Swan

SAMPLE ADDRESS: Jon Swan
Ammoc Seep #2
Bethlehem NH

Legend	
Passes	✓
Fails EPA Primary	⊗
Fails EPA Secondary	⚠
Fails State Guideline	✗
Attention	⚠

DATE AND TIME COLLECTED: 06/27/2024 09:45AM
DATE AND TIME RECEIVED: 06/27/2024 12:34PM
ANALYSIS PACKAGE: PFAS-537.1-18-NH
RECEIPT TEMPERATURE: ON ICE 16° CELSIUS

CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
Perfluorohexanoic Acid (PFHxA)*	1.45	ng/L		J	2.00	No Limit	EPA 537.1	JLR-NH	07/01/2024 03:17PM
Perfluorononanoic Acid (PFNA)*	<2.00	ng/L	✓		2.00	11 ng/L	EPA 537.1	JLR-NH	07/01/2024 03:17PM
Perfluorooctanesulfonic Acid (PFOS)*	<2.00	ng/L	✓		2.00	15 ng/L	EPA 537.1	JLR-NH	07/01/2024 03:17PM
Perfluorooctanoic Acid (PFOA)*	1.52	ng/L	✓	J	2.00	12 ng/L	EPA 537.1	JLR-NH	07/01/2024 03:17PM
Perfluorotetradecanoic Acid (PFTA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	07/01/2024 03:17PM
Perfluorotridecanoic Acid (PFTDA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	07/01/2024 03:17PM
Perfluoroundecanoic Acid (PFUNA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	07/01/2024 03:17PM
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	88	%	✓			70-130%	EPA 537.1 - SS	JLR-NH	07/01/2024 03:17PM
Perfluoro-n-[1,2-13C2]decanoic Acid (13C2-PFDA)	90	%	✓			70-130%	EPA 537.1 - SS	JLR-NH	07/01/2024 03:17PM
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C2-PFHxA)	86	%	✓			70-130%	EPA 537.1 - SS	JLR-NH	07/01/2024 03:17PM
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic Acid (13C3-HFPO-DA)	84	%	✓			70-130%	EPA 537.1 - SS	JLR-NH	07/01/2024 03:17PM




Donald A. D'Anjou, Ph. D.
Laboratory Director



GRANITE STATE ANALYTICAL SERVICES, LLC.

2541 White Mountain Highway, Unit 7, North Conway, NH 03860
Phone (603) 447-4826 website www.granitestateanalytical.com

Laboratory Report

Jon Swan
saveforestlake@yahoo.com
Bethlehem, NH

Date Printed: 08/20/2024
Work Order #: 2408-03712
Client Job #:
Date Received: 08/15/2024
Sample collected in: New Hampshire

Attached please find results for the analysis of the samples received on the date referenced above.

Unless otherwise noted in the attached report, the analyses performed met the requirements of the analyzing laboratory's Quality Assurance Plan, Standard Operating Procedures and State Accreditation. This certificate shall not be reproduced, except in full, without the written approval of the analyzing laboratory. The results presented in this report relate to the samples listed on the following pages in the condition in which they were received. Accreditation for each analyte is identified by the * symbol following the analyte name. Location of our analyzing laboratory is identified by the code in the Analyst Column.

A & L Laboratory:
Identified by ME in Analyst Column
155 Center Street, Auburn, Maine 04210
www.allaboratory.com

Granite State Analytical Services LLC:
Identified by NH in Analyst Column
22 Manchester Road, Derry, NH 03038
www.granitestateanalytical.com

Nashoba Analytical:
Identified by MA in the Analyst Column
31A Willow Road, Ayer, MA 01432
www.nashobaanalytical.com

ANALYSIS RELATED NOTES:

- RL: "Reporting limit" means the lowest level of an analyte that can be accurately recovered from the matrix of interest.
- DF: "Dilution factor" means the ratio of the volume of the sample to the volume of the final (dilute) solution.
- MDL: "Minimum Detection Limit" means the minimum result which can be reliably discriminated from a blank with a predetermined confidence level.
- A & L Laboratory / Granite State Analytical Services LLC / Nashoba Analytical. accreditation lists can be found on our websites listed above.
- Subcontracted samples will be identified by the Accreditation number of the subcontract laboratory in the analyst field for each analyte and the appropriate laboratory will be listed here. **None**
- Data Qualifiers (DQ) Flags provide additional information in regards to the receipt, analysis or quality control of a sample. These are indicated under the DQ Flags Column on your report and listed here if necessary: **Data Qualifier (DQ) Flags: J = Estimated concentration.**

SAMPLE STATE SPECIFIC NOTES:

Additional Narrative or Comments: **None**

We appreciate the opportunity to provide you with laboratory services. If you have any questions regarding the enclosed report, please contact the laboratory and we will be happy to assist you.



Donald A. D'Anjou, Ph. D.
Laboratory Director

A & L Laboratory: Accreditations: Maine ME00021, New Hampshire 2501, Maine Radon Registration ID # SPC20
Granite State Analytical Services, LLC: Accreditations: New Hampshire 1015; Maine NH00003;
Massachusetts M-NH0003; Rhode Island 101513; Vermont VT-101507
Nashoba Analytical: Accreditations: Massachusetts M-MA1118



GRANITE STATE ANALYTICAL SERVICES, LLC.

2541 White Mountain Highway, Unit 7, North Conway, NH 03860
Phone (603) 447-4826 website www.granitestateanalytical.com

CERTIFICATE OF ANALYSIS FOR DRINKING WATER

DATE PRINTED: 08/20/2024
CLIENT NAME: Jon Swan
CLIENT ADDRESS: saveforestlake@yahoo.com
Bethlehem, NH

SAMPLE ID #: 2408-03712-001
SAMPLED BY: J Swan

SAMPLE ADDRESS: Jon Swan
NCES Seep Ammonoosuc
Bethlehem NH

Legend	
Passes	✓
Fails EPA Primary	⊗
Fails EPA Secondary	⚠
Fails State Guideline	✗
Attention	⚡

DATE AND TIME COLLECTED: 08/15/2024 11:55AM
DATE AND TIME RECEIVED: 08/15/2024 02:10PM
ANALYSIS PACKAGE: PFAS-537.1-18-NH
RECEIPT TEMPERATURE: 14° CELSIUS

CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11CI-PF30UdS)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	08/19/2024 02:20PM
4,8-dioxa-3H-perfluorononanoic acid (ADONA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	08/19/2024 02:20PM
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9CI-PF30NS)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	08/19/2024 02:20PM
Date Extracted	-					No Limit	EPA 537.1	JLR-NH	08/19/2024 07:45AM
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	08/19/2024 02:20PM
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	08/19/2024 02:20PM
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	08/19/2024 02:20PM
Perfluorobutanesulfonic Acid (PFBS)*	4.43	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	08/19/2024 02:20PM
Perfluorodecanoic Acid (PFDA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	08/19/2024 02:20PM
Perfluorododecanoic Acid (PFDoA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	08/19/2024 02:20PM
Perfluoroheptanoic Acid (PFHpA)*	2.08	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	08/19/2024 02:20PM
Perfluorohexanesulfonic Acid (PFHxS)*	0.898	ng/L	✓	J	2.00	18 ng/L	EPA 537.1	JLR-NH	08/19/2024 02:20PM




Donald A. D'Anjou, Ph. D.
Laboratory Director



GRANITE STATE ANALYTICAL SERVICES, LLC.

2541 White Mountain Highway, Unit 7, North Conway, NH 03860
Phone (603) 447-4826 website www.granitestateanalytical.com

CERTIFICATE OF ANALYSIS FOR DRINKING WATER

DATE PRINTED: 08/20/2024
CLIENT NAME: Jon Swan
CLIENT ADDRESS: saveforestlake@yahoo.com
Bethlehem, NH

SAMPLE ID #: 2408-03712-001
SAMPLED BY: J Swan

SAMPLE ADDRESS: Jon Swan
NCES Seep Ammonoosuc
Bethlehem NH

Legend	
Passes	✓
Fails EPA Primary	⊗
Fails EPA Secondary	⚠
Fails State Guideline	✗
Attention	⚠

DATE AND TIME COLLECTED: 08/15/2024 11:55AM
DATE AND TIME RECEIVED: 08/15/2024 02:10PM
ANALYSIS PACKAGE: PFAS-537.1-18-NH
RECEIPT TEMPERATURE: 14° CELSIUS

CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
Perfluorohexanoic Acid (PFHxA)*	5.68	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	08/19/2024 02:20PM
Perfluorononanoic Acid (PFNA)*	<2.00	ng/L	✓		2.00	11 ng/L	EPA 537.1	JLR-NH	08/19/2024 02:20PM
Perfluorooctanesulfonic Acid (PFOS)*	<2.00	ng/L	✓		2.00	15 ng/L	EPA 537.1	JLR-NH	08/19/2024 02:20PM
Perfluorooctanoic Acid (PFOA)*	3.19	ng/L	✓		2.00	12 ng/L	EPA 537.1	JLR-NH	08/19/2024 02:20PM
Perfluorotetradecanoic Acid (PFTA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	08/19/2024 02:20PM
Perfluorotridecanoic Acid (PFTDA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	08/19/2024 02:20PM
Perfluoroundecanoic Acid (PFUNA)*	<2.00	ng/L			2.00	No Limit	EPA 537.1	JLR-NH	08/19/2024 02:20PM
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NETFOsAA)	92	%	✓			70-130%	EPA 537.1 - SS	JLR-NH	08/19/2024 02:20PM
Perfluoro-n-[1,2-13C2]decanoic Acid (13C2-PFDA)	99	%	✓			70-130%	EPA 537.1 - SS	JLR-NH	08/19/2024 02:20PM
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C2-PFHxA)	92	%	✓			70-130%	EPA 537.1 - SS	JLR-NH	08/19/2024 02:20PM
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic Acid (13C3-HFPO-DA)	89	%	✓			70-130%	EPA 537.1 - SS	JLR-NH	08/19/2024 02:20PM




Donald A. D'Anjou, Ph. D.
Laboratory Director



Superfund <<https://epa.gov/superfund>>

Designation of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) as CERCLA Hazardous Substances

On this page:

- Rule Summary
- Rule History
- Additional Resources

Rule Summary

EPA is taking action to designate two of the most widely used per- and polyfluoroalkyl substances (PFAS) — **perfluorooctanoic acid (PFOA)** and perfluorooctanesulfonic acid (PFOS), including their salts and structural

Basic Information

Legal Authorities

- 42 U.S.C §9602 [🔗](https://www.govinfo.gov/app/details/uscode-2010-title42/uscode-2010-title42-chap103-subchapi-sec9602)
<<https://www.govinfo.gov/app/details/uscode-2010-title42/uscode-2010-title42-chap103-subchapi-sec9602>>

isomers — as hazardous substances under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as Superfund.

CERCLA designation will help protect public health and the environment from potentially harmful exposure to these chemicals and will provide tools to hold polluters accountable. Designation enables cost recovery and enforcement authorities to address PFOA and PFOS releases, which ensures that the polluters pay for investigations and cleanup.

Designation will enable EPA (and other agencies with delegated CERCLA authority) to address more sites, take earlier action, and expedite eventual cleanup. It will also improve transparency around releases of these harmful chemicals.

The rule requires entities to immediately report releases of PFOA and PFOS that meet or exceed the reportable quantity to the National Response Center, state or Tribal emergency response commission, and the local or Tribal emergency planning committee (local emergency responders). Entities do not need to report past releases of PFOA or PFOS following the requirements of CERCLA section 103 and 111(g) or EPCRA section 304 if they are not continuing as of the effective date of the rule.

Other provisions require federal entities that transfer or sell their property to notify about the storage, release, or disposal of PFOA or PFOS on the property and include a covenant (commitment in the deed) warranting that it has cleaned up any resulting contamination or will do so in the future, if necessary, as required under CERCLA 120(h). Section 306 of CERCLA requires Department of Transportation to list and regulate these substances as hazardous materials under the Hazardous Materials Transportation Act.

CERCLA is designed to address and prioritize sites that present risk to human health and the environment and serves those communities that are most vulnerable to potential adverse health risks from exposure to contamination.

Docket Numbers

- EPA-HQ-OLEM-2019-0341 [🔗](https://www.regulations.gov/docket/epa-hq-olem-2019-0341)
<<https://www.regulations.gov/docket/epa-hq-olem-2019-0341>>

Effective Date

- July 8, 2024

https://www.caledonianrecord.com/news/local/casella-slapped-with-operating-deficiency-for-leachate-spill/article_ec7c92b0-a06e-5e0b-a368-9f874402e8e8.html

FEATURED

Casella Slapped With "Operating Deficiency" For Leachate Spill

rblechl@caledonian-record.com Staff Writer

Jul 22, 2021



The state is calling the responses by Casella Waste Systems regarding the 154,000-gallon leachate spill (pictured here in M its Bethlehem landfill "incomplete" and seeks more information to determine environmental and human health impacts. (Photo courtesy of the N.H. Department of Environmental Services)

Colby, Jaime

From: Kimberly Crosby <Kimberly.Crosby@casella.com>
Sent: Friday, September 6, 2024 3:51 PM
To: Colby, Jaime; Daun, Mary
Cc: McKenna, Leah
Subject: NCES Incident Reported
Attachments: 9 6 2024 NCES Incident Report.pdf

EXTERNAL: Do not open attachments or click on links unless you recognize and trust the sender.

Good Afternoon –

Attached is the Incident Report for NCES. Please feel free to reach out if you should need additional information or have any questions.

Have a great weekend,

Kim Crosby, CES

Director of Environmental Compliance

Permits, Compliance & Engineering

408 East Montpelier Road, Montpelier, VT 05602

c. 802-585-5442

e. kimberly.crosby@casella.com • w. casella.com

CASELLA

RECYCLING • SOLUTIONS • ORGANICS • COLLECTION • ENERGY • LANDFILLS

CONFIDENTIALITY NOTICE The information contained in this communication is confidential, may constitute inside information, may be attorney-client privileged and is intended only for the use of the named recipient. If the reader of this e-mail message is not the intended recipient, or the employee or agent responsible for delivery of the message to the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication is prohibited. If you have received this e-mail in error, please notify the sender immediately by telephone at +1 802-224-0105.



Incident Report Form for Solid Waste Management Facilities – Permitted and Permit-Exempt Facilities

Waste Management Division, SWMB



RSA/Rule: [Env-Sw 1005.09\(c\)](#)

Instructions: Complete form in its entirety, utilizing additional pages, as necessary. Maps and diagrams are recommended for clarity. A written report is due within 5 working days of the incident / situation date. Form meets the requirements of Env-Sw 1005.09(c) for “written report” if completed in its entirety and submitted in accordance with submission timeframe requirements.

Section I – General Information		
1. Date & Time of Incident / Situation:	2. Date of Report Submission to NHDES:	3. Name of Person Preparing Report:
09/09/2014-06/27/2024	9/6/2024	Kim Crosby
4. Facility Name:	5a. Affected Area Within Facility	5b. Physical Address, Town / City:
North Country Environmental Services	North Country Environmental Services	581 Trudeau Road, Bethlehem, NH 03574
6. NHDES SW Permit Number:	7. Permittee Name on Permit:	8. Mailing Address:
DES-SW-SP-03-002	North Country Environmental Services	P.O. Box 9 Bethlehem, NH 03574

Section II – Parties Involved in Incident / Situation			
9. Persons:			
	Name:	Title:	Affiliation:
a.	Joe Gay	Engineer	NCES
b.	Kevin Roy	General Manager	NCES
c.	Bruce Grover	Operations Manager	NCES
d.	Kim Crosby	Director of Compliance	NCES
e.			
f.			

Section III – Details
<p>10. The quantity and types of wastes and material(s) involved in the incident or situation and in the clean-up activities:</p> <p>While conducting an investigation into the cause of increased flows in the landfill liner secondary system discussed in the June 24, 2024 Letter of Deficiency No. SWMB 24-006, Casella's investigators determined that the overliner for Stage IV, Phase I, which has both a primary and a secondary leachate collection system, had been penetrated via the drilling of landfill gas well GW-202 on February 7, 2024. The overliner was required as part of a Stage IV permit issued to NCES in 2003 because the underlying Stage I double liner did not include a geotextile overlay for enhanced leachate travel time because geotextile was not required when the Stage I liner was placed. In 2013, NCES applied for and received a waiver for an overliner for an adjacent lift of waste over the Stage I liner. Casella's investigators learned that NCES's on-site manager and its overseeing company engineer mistakenly concluded that in light of the 2013 waiver the existing overliner could be treated as decommissioned. The investigators also learned that beginning in 2014 and continuing until early this year NCES's landfill gas management consultant oversaw the installation of eleven LFG management wells (enumerated with installation</p>

and decommissioning dates below) that penetrated both liners of the overliner sytem to extract LFG from the waste mass beneath the overliner. Casella's investigation also revealed that GW-202 has been pulling leachate from the waste mass underlying the overliner and discharging a significant portion of the leachate into the secondary collection system of the overliner. Because the sump for the overliner's secondary is plumbed to the Stage IV, Phase I, secondary, it is apparent that the placement and operation of GW-202 has been a substantial contributing factor to the increased leachate flows in the base liner system and particularly the Stage IV, Phase I, secondary. NCES will supplement this report and its response to the June 24, 2024, LOD, with a detailed explanation of how these gas wells have contributed to the increased leachate flows in the Stage IV, Phase I, secondary system.

Well Number	Installation Date	Decommissioning Date
GW-88	9/9/2014	12/2017
GW-102	4/24/2015	3/2019
GW-103	4/23/2015	12/2020
GW-105	4/30/2015	7/2024
GW-113	5/12/2016	10/2022
GW-134	8/18/2018	5/2023
GW-146	9/17/2020	ACTIVE
GW-148	9/15/2020	2/2024 NOTE: GW-202 drilled as a replacement
GW-172	4/27/2023	ACTIVE
GW-202	2/7/2024	ACTIVE
GW-206	6/27/2024	ACTIVE

Of the eleven wells identified, 146, 172, 202 and 206, remain active for gas collection in the area of the overliner.

11. Measures employed to contain releases caused by the incident or situation:

No release to the environment was caused by these incidents. As mentioned above, there is a double-liner system beneath the overliner that is intact and functioning as designed. All secondary detection liquids are captured and managed in the leachate collection system and transported off site for treatment.

12. Assessment of actual or potential hazards to the environment, safety and human health related to the incident:

Casella's investigation has concluded that while liquid levels on the base liner secondary are exceeding an action level, the magnitude of the increase is within the hydraulic capacity of the systems. Additionally, the Stage I primary and secondary leachate systems are functioning properly, and leachate is being managed in a manner that has prevented a release to the environment. Leachate passing through the penetrations in the overliner have no pathway to the environment and are instead captured by the Stage I liner.

13. Measures the permittee has or intends to apply to reduce, eliminate, and prevent a recurrence of the incident or situation:

To reduce the secondary leachate flows in the areas of the gas wells discussed, NCES proposes to seal off wells 202, 146 and 148 via the use of a cement and bentonite grout mix to an elevation above the area of penetration. Sealing and grouting will put a thin grout down the center tube running down the entire column of each well. The grout mixture will push out of the perforated piping and into the stone pack around the edge of the overliner, sealing off the penetration area.

NCES will ensure that all personnel and third party contractors are notified of the existence and status of the overliner, i.e., that it is not out of service and must not be further damaged.

14. If measures not completed by time of report submission, expected date of completion:

October 2024

Section IV – Signatures**15a. Person Preparing Report:**

Name:	Title / Affiliation:	Signature:
Kim Crosby	Director of Compliance	<i>Kim Crosby</i>
Phone Number:	Email Address:	

15b. Permittee:

Name:	Title / Affiliation:	Signature:
North Country Environmental Services, Inc.	Director of Compliance	<i>Kim Crosby</i>
Phone Number:	Email Address:	

Form Submittal Instructions:

the Franconia Inn

Rte. 116, Easton Road
Franconia, NH 03580

Morning Waiters/Waitresses
Evening Dining Room Bus Person
Dishwasher

823-5542 • Apply in person

Rosa Flamingo's

HELP WANTED

- Bus Person
- Host/Hostess
- Experienced Waitstaff
- Dishwasher

- Apply in Person -

MAIN STREET • BETHLEHEM

WANTED

L/P Service Man

or Oil Bumer Man who is willing to learn L/P.
Needs experience in servicing boilers
and hot air furnace's.

Contact FRANCONIA GAS CORPORATION
between the hours of 8:00 a.m. and 4:30 p.m.

at 444-5217 or 444-8817

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utilities, trash
removal, partially
furnished. Call

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Littleton

\$80/monthly

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stock
in America

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4-Dr. Sedan Lt. Blue Exterior,
Royal Blue Interior.
Rebuilt 318 engine with less
than 1,600 miles. Many new
parts, including timing
chain, fuel pump, car-
burator, battery, fuel &
brake lines. \$1,200 or Best
Offer. Dave's Taxi 444-0407

LINE CLASSIFIEDS

30 words or less... \$4.75

10¢ each additional word

PAYABLE IN ADVANCE

THE COURIER

146 Union Street, Littleton, NH 03561

Courier Classifieds

Work Hard For You!

Citizens of Bethlehem

Under agreement with your Board of Selectmen and the State of New Hampshire, we have started work to completely remove, all of the solid waste from the old unlined landfill and the single lined parts of the Sanco landfill located on Trudeau Road. Material, previously placed in the old unlined landfill will be relocated into the new state of the art double lined landfill. Completion of this project, which will take approximately 40 days, will remediate over 15 years of previous practices appropriate for those days but clearly not acceptable under today's standards. In performing this work, it is not possible to avoid some stirring of the waste and the creation of some odors which may be offensive. We deeply apologize to any impacted citizens for this inconvenience and will do everything possible to expedite the project. We welcome any inquiries and will be pleased to assist the public as we proceed with this important contribution to the preservation of our environment.

We are proud to be making a difference.

Thank You

CASELLA WASTE MANAGEMENT

802-775-0325

HEARING NOTICE

Littleton Planning Board

Tuesday, Sept. 7, 1993 - 7 pm
Second Floor Town Building

- 7:00 Review of 6/29, 7/20 and 7/6/93 minutes
7:05 Louis P. Berry - Case No. PB 93-06 - Major Subdivision and Lot Line Adjustment, creating two (2) lots on the Lisbon Road in the C-1 zone, Map 225, lots 16.1 and 17.1
7:35 Slate Lodge Associates - Case No. PB 93-07 - Phase II Major Subdivision creating six (6) lots on

Franconia Bt

Franconia Tce
Tuesday, A

There will be a public
application for a site
Garnet Hill office bu
The project involves a
sueing and applying

NO

The Mountain Club and
Painting R
Exterior

Spots and Information
Burrows.

Deadline for Bids is 8
(803-

A Marriott

Town of Burie

Burial Plot
Burial
Cremation

Per order of the B

Jul



State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

6 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095

603-271-3503 FAX 603-271-2867

TDD Access: Relay NH 1-800-735-2964



December 9, 1993

Mr. Leo R. Larochelle, P.E.
Consumat Sanco Inc.
100 Hall Street
Suite 301C, Box 6
Concord, NH 03301

✓ KH: FV / file

STANDARD FILES
Town: <u>Bethlehem</u>
Project: <u>Consumat -</u> <u>Sanco</u>
<u>Correspondence/Data/Permit</u>

SUBJECT: **CONTAMINATION ASSESSMENT REFUSE RELOCATION
PROJECT, CONSUMAT SANCO INC. LANDFILL, BETHLEHEM, NH
(WMD LOG #798-93, DES #870433)**

Dear Mr. Larochelle:

The Department of Environmental Services (Department) has completed review of the subject document submitted on behalf of Consumat Sanco Inc. (Sanco) by Sanborn, Head & Associates, Inc (SHA). This report was submitted in accordance with the work plan approved by the Department on September 1, 1993. Based on the information contained in the report it appears the source (refuse and contaminated soils) has been removed and the Department concurs with the following recommendations provided by SHA:

- No further excavation to remove additional soils is necessary.
- Prior to regrading, the remaining surficial debris is to be excavated and placed in Stage I.
- Stabilize and regrade to contain runoff within the excavation area and seed to limit erosion.
- Continue to monitor the water quality conditions at the site in a manner consistent with the ongoing water quality monitoring program.

Sanco is to immediately implement the grading and stabilization of the area in accordance with the following schedule:

- December 1993 - remove remaining surficial debris and rough grade excavated area.

Mr. Leo R. Larochelle, P.E.

**CONTAMINATION ASSESSMENT REFUSE RELOCATION
PROJECT, CONSUMAT SANCO INC. LANDFILL, BETHLEHEM, NH
(WMD LOG #798-93, DES #870433)**

NHDES Letter of December 9, 1993

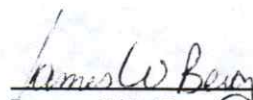
Page 2

- April/May 1994 - fine grading, implementation of other erosion control measures, and seed area.
- August 1994 and each year there after - inspect and maintain areas with erosion and poor germination and the infiltration basin.

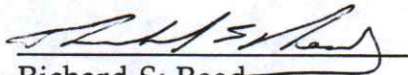
Upon stabilization of the area previously occupied by the unlined and single-lined landfills, the permittee is to file a report as provided in Env-Wm 311.07, and submit record drawings in accordance with Env-Wm 310.14. The permittee is to file an annual report with the Department for this area which summarizes the effectiveness of the waste removal project.

If there are questions regarding this letter please contact Mr. James Berg, District Inspector, at 271-2925.

Sincerely,



James W. Berg
Waste Management Specialist III
Solid Waste Compliance Section
Waste Management Division



Richard S. Reed
Supervisor
Solid Waste Compliance Section
Waste Management Division

RSR/JWB/neo/csisha.wp

cc: Pamela Sprague, PA&DRS
John Regan, GPB
Paul Sanborn, Sanborn, Head & Assoc., Inc.
Robert Massey, Consumat Sanco Inc.
James Bohlig, Casella Waste Management, Inc.
Bethlehem, Board of Selectmen
Consumat Sanco Inc. File/DB

B. Groundwater Contamination

Beginning in 1996, DES required that NCES apply a tracer compound, sodium bromide, to the NCES Landfill, Stage II and Stage III. The NCES Landfill has been constructed, in part, on top of the footprint of the former unlined landfill (waste removal and relocation into Stage I of the lined landfill began in December 1991 and was completed in October 1993). The bromide tracer was required to be added to the landfill operations for the Stage II and Stage III lined portion of the landfill to aid in differentiation of groundwater quality impacts associated with the previous releases from the former unlined landfill from a failure of the existing double HDPE geomembrane leachate liner collection system. Because sodium bromide was not added to the unlined landfill, detection of bromide concentrations above background values in any monitoring wells downgradient of the landfill would indicate that there were liner leak issues.

Volatile organic compounds or elevated concentrations of bromide have been detected in groundwater monitoring wells located downgradient from the landfill, including wells MW-402U, MW-403L, B-913M, B-919U, B-921M, B-921U and B-304UR. The detection of the VOC contaminants and elevated concentrations of bromide indicate that the operation of the existing landfill has resulted in releases of regulated contaminants in violation of condition #9 of Groundwater Management and Release Detection Permit #GWP-198704033-B-005 (Groundwater Permit), which was issued to the applicant in November 2007.

The key issues of concern relative to these detections of VOCs and elevated concentrations of bromide were outlined in Section D of DES's September 10, 2008 technical review letter. In that letter, DES requested that additional information be provided to further evaluate the source of the VOCs and the elevated concentrations of bromide detected in downgradient monitoring wells. In response to this request for additional information, the applicant provided the documents listed as application information items 8. and 9. above.

These documents provide a detailed hydrogeological and engineering analysis of the situation to support NCES's contention that the landfill liner system is not leaking and is not the source of the elevated concentrations of bromide and VOCs detected in several monitoring wells. In these documents, NCES concludes that the releases are not due to a leaking liner system and are most likely due to known leachate spills and an accidental discharge of leachate to stormwater systems during 2006 construction events.

Because NCES's hydrogeological and engineering analysis relies on a number of assumptions regarding aquifer properties, construction history, and the current condition of the existing landfill liner system that are not verified by independent field or environmental data, the analysis is not conclusive. DES does not agree that the analysis demonstrates that the liner system is not leaking. Until NCES completes the on-going corrective action plan and produces data to demonstrate that the work has resulted in achieving DES-approved performance standards for groundwater remediation, DES concludes that the landfill liner system is or may be a contributing factor to the contamination in the monitoring wells.

There is uncertainty as to whether the VOCs and elevated concentrations of bromide detected in the downgradient wells are the result of NCES's own mismanagement of the leachate collection system. By virtue of the past spills and releases from the leachate collection system (the occurrence of which NCES has acknowledged), NCES has raised doubt as to the source of the VOCs and elevated concentrations of bromide. The bromide tracer's function is to detect the presence of leaks in the liner system. To the extent NCES is now unable to satisfy DES that the landfill liner is not the source of the groundwater contamination, it is due in large measure to NCES's own operational failure at the facility.

Env-Sw 1002.02(d) provides in pertinent part that "[f]acilities and practices shall not contaminate surface or groundwater in violation of...the conditions of any permit issued by DES..." Based upon the groundwater quality conditions, the analysis and data presented, and the status of the corrective action plan implementation, DES concludes that there have been releases that have in fact contaminated groundwater in violation of the conditions of the facility's Groundwater Management and Release Detection Permit. Because the contamination detected at the site is consistent with what would be expected with a release from the liner system and because NCES has not demonstrated to the satisfaction of DES that there is no ongoing release from the facility, DES can not conclude at this time that the proposed facility can comply with Env-Sw 1002.02(d). Therefore, in accordance with Env-Sw 305.03(b)(2), DES can not approve the application.

Until the remedial actions are fully implemented and soil and groundwater performance data are collected, DES will not have sufficient information to determine the source of the contaminated groundwater and to conclude that it has been remediated.

In summary, and for the reasons outlined in this letter, DES hereby denies the requested applications for permit modification.

III. Continuing Groundwater Management Obligations

Irrespective of this permit decision, DES notes that the applicant remains responsible to continue and complete the ongoing remedial work as required by Groundwater Management and Release Detection Permit #GWP-198704033-B-005.

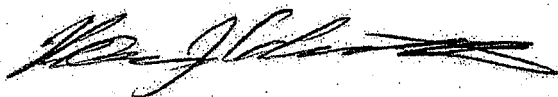
Correspondence regarding the proposed groundwater performance standards, as contained in NCES's October 13, 2008 response to the September 10, 2008 DES Comment Letter, will be issued by DES under separate cover.

IV. Appeal

In accordance with RSA 149-M:8 and Env-Sw 305.03(a)(3), this decision issued by DES may be appealed to the Waste Management Council as provided under RSA 21-O:9, V and Env-WMC 200.

If you have any questions regarding this decision, please contact me at the letterhead address, via telephone at (603) 271-1997, or via e-mail at michael.wimsatt@des.nh.gov.

Sincerely yours,



Michael J. Wimsatt, P.G., Director
Waste Management Division

Department of
Environmental
Services

Digitally signed by Department of
Environmental Services
DN: cn=Department of Environmental
Services, c=US, o=Directors office,
ou=Waste Management Division,
email=pamela.werner@des.nh.gov
Date: 2008.12.12 14:50:00 -05'00'

Appendix A: Response to Public Comments

CC: Bryan Gould, Esq., Brown, Olson & Gould
Town of Bethlehem
Brenda Keith, Esq., Boutin & Altieri
Robert Grillo, P.E., CMA Engineers
Paul Rydel, P.G., SHA Associates
Thomas Burack, Commissioner, DES
Richard Head, Esq., NHDOJ
Harry Stewart, P.E., DES
Robert Scott, DES

3.1 Item 1 – Updated Hydrogeologic Evaluation of the GMZ and Adjacent Areas

Based on NHDES' comments in Item 1, we understand the objective of this component of the work plan to be compilation and synthesis of recent and historical information regarding stratigraphy, water levels (flow direction, gradients), hydraulic conductivity, and analytical data from existing wells and logs with the objective of assessing source and fate of previous and potential releases inside the GMZ and adjacent areas. Based on the introduction in the NHDES letter, sources of releases are interpreted to include: "former unlined landfill, former and current leachate management infrastructure, and past landfill leachate releases".

To accomplish the above-described objective, the following existing sources of information will be compiled and prepared:

- Compilation of current and former boring and monitoring well logs and update well inventory table;
- Update of hydrogeologic cross-sections;
- Compilation and assessment of water level data;
- Compilation of slug testing data; and
- Review published literature (surficial geologic mapping).

In addition to compilation of existing information, new data collected as part of the proposed site activities described above will also be incorporated into the hydrogeologic conceptual site model update. A one-day site visit to observe and log exposed and accessible overburden materials in the eastern portion of the GMZ will be performed to inform the updated hydrogeologic conceptual site model. The site visit will be combined with dig-safe pre-marking/location layout for proposed wells described in Sections 3.2 and 3.3 below.

The results of the hydrogeologic conceptual site model update will be presented in a CSM Report.

3.2 Item 2 – Additional Characterization of Deeper Overburden Groundwater

Based on NHDES' comments in Item 2, we understand the objective of this component of the work plan to be installing additional monitoring wells in deeper overburden within and downgradient to the west of the GMZ for evaluation for potential incorporation into the release detection monitoring program.

To accomplish this objective, three couplet overburden wells and one deeper companion well to MW-802 are proposed within and adjacent to the GMZ. The proposed monitoring well construction is summarized in Exhibit 1. Refer to Figure 2 for a proposed exploration location plan.

2. As noted earlier in the letter, an apparent downward gradient and increasing contaminant concentrations with depth have been noted at the B-304 couplet that raise the question of impacts potentially being transported downgradient in deep overburden groundwater that is not monitored nor has not been historically investigated at the site. As part of the work plan, please propose locations for deep monitoring wells to improve understanding of deep geologic strata, evaluate potential historical impacts, and to improve the ability to monitor groundwater for release detection purposes from the lined landfill across the northeastern portion of the site. Pairing of deep monitoring wells with shallower existing well locations may be favorable for data collection but is not intended to be a requirement.

Response:

Based on data from the last five years, downward gradients are generally noted at the B-304 couplet with the exception of some fall sampling events. The nearby B-928 couplet also indicates downward gradients. Downward gradients at the B-304 and B-928 couplets are consistent with the overall northward groundwater flow toward the Ammonoosuc River, which is located approximately 70 feet lower than the groundwater table elevation at B-304UR and B-928U. Northerly groundwater flow and downward gradients in the vicinity of B-304 and B-928 are consistent with the existing CSM.

To improve the ability to monitor groundwater for release detection purposes near the lined landfill across the northeastern portion of the site, we have evaluated locations for additional monitoring wells close to the northern limit of the landfill. The activities in Section 3.2 of this work plan include installation of two release detection monitoring well couplets (a water table well and a deeper well) near the northern limit of the landfill to provide additional monitoring locations in this area. The locations of these proposed locations were specifically selected for release detection purposes to be close to the landfill and upgradient of Stormwater Pond #4 and former leachate infrastructure.

Because of their proximity to the lined landfill, and position upgradient of Stormwater Pond #4 and the former leachate infrastructure, the proposed new wells are anticipated to be suitable for release detection purposes. We note that given their location near the limit of the former unlined landfill and within the GMZ, the new borings may indicate residual impacts from the former presence of unlined waste in this area; however, we anticipate it will be feasible to differentiate the water quality signature related to historical conditions from a potential future release. As part of release detection monitoring, the water quality results from the new wells will be reviewed in the context of other nearby wells (e.g., MW-802, MW-802, B-103S, B-103D), as wells as the criteria discussed in Appendix A of the triannual reports, most recently the November 2023 Triannual Report (i.e., repeatable or persistent concentrations of analytes of interest over multiple sampling events above sitewide background concentrations; elevated and increasing concentrations of analytes of interest; multiple analytes of interest detected).

O'Rourke, James

From: Lilly Corenthal <lcorenthal@sanbornhead.com>
Sent: Friday, January 17, 2025 3:09 PM
To: O'Rourke, James
Cc: Marc Morgan; Samuel Nicolai; Kimberly Crosby; Bruce Grover; Tim White
Subject: NCES - Notification of SSI groundwater quality results
Attachments: Tbl 1 - Background Eval.pdf; Tbl 2 - Initial Exceedance.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

EXTERNAL: Do not open attachments or click on links unless you recognize and trust the sender.

Good afternoon Jamie,

We are providing notification of groundwater PFAS sampling results from SSI wells sampled in December 2024 compared to background values at the NCES Landfill.

PFAS data were reported by the laboratory on January 8th. These data represent the first sampling event from the SSI locations installed in November 2024.

The following attachments are provided:

- Table 1 compares groundwater sampling results to background concentrations and includes previous results from SSI wells in November and December 2024 for reference.
- Table 2 includes a discussion of initial PFAS background exceedances detected in SSI wells in December 2024.

A data transmittal will be prepared that provides additional information regarding the Fall 2024 SSI activities including laboratory reports and drilling logs. In addition, the data will be further assessed in the April 2025 sampling event.

Regards,
Lilly

Lilly Corenthal, PG
Lead Hydrogeologist

Licensed: PG in NH

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TABLE 1
Evaluation of Background Exceedances - SSI Samples - Nov. and Dec. 2024
North Country Environmental Services, Inc.
Bethlehem, New Hampshire
Permit No. GWP-198704033-B-008

Sample Location	Sample Date	Sample Type	SU	uS/cm	C	mg/L						ug/L	ng/L									
			pH	Specific Conductance	Temperature	Chemical Oxygen Demand (COD)	Chloride	Total Kjeldahl Nitrogen (TKN)	Arsenic, Dissolved	Barium, Dissolved	Iron, Dissolved	Manganese, Dissolved	Dioxane (4,4-)	Perfluorobutanoic Acid (PFBA) [3]	Perfluoropentanoic Acid (PFPeA) [4]	Perfluorohexanoic Acid (PFHxA) [5]	Perfluoroheptanoic Acid (PFHpA) [6]	Perfluorooctanoic Acid (PFOA) [7]	Perfluorobutanesulfonic Acid (PFBS) [4S]	Perfluorohexanesulfonic acid (PFHxS) [6S]	Perfluorooctanesulfonic Acid (PFOS) [8S]	
GW-1 (AGQS)								0.005	2		0.3	0.32						12		18	15	
SMCL			6.5-8.5				250			0.3	0.05											
Background 2024-11			6.3-8.6	125	5.6-11.9	15	1.8	0.58	0.00051	0.025	0.41	0.072	<0.25	<1.5-<2.5	<1.5-<2.5	<1.5-<2.5	<1.5-<2.5	<1.5-<2.5	<1.5-<2.5	<1.5-<2.5	<1.5-<2.5	
Supplemental Site Investigation																						
B-932U	11/4/2024	N	6.27	93	10.6	<10	5.7	<0.5	<0.0005	0.0094	<0.05	0.041	<0.25	2.35	<1.81	2.54	2.48	4.95	4	<1.81	1.94 JH	
B-932L	11/4/2024	N	7.02	133	9.2	<10	3.3	<0.5	0.00057	0.0077	<0.05	<0.005	<0.25	<1.74	2.34	2.69	<1.74	2.54	<1.74	<1.74	<1.74	
B-933U	12/10/2024	N	6.93	108	11	<10	2	<0.5	0.0098	0.02	7	3.3	<0.25	<10	<10	<10	<10	<10	<10	<10	<10	
B-933L	12/10/2024	N	7.28	138	10.6	<10	3.1	<0.5	0.00067	0.02	<0.05	0.46	<0.25	<10	<10	<10	<10	<10	<10	<10	<10	
B-934U	12/10/2024	N	6.18	401	15.7	34	21	0.93	0.0093	0.13	21	11	0.55	41.2	68.1	90.7	22.8	19.8	46.3	2.40	<1.71	
B-934L	12/10/2024	N	6.74	162	15.2	<10	2.7	<0.5	0.04	0.055	15	2.8	<0.25	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	
MW-802L	12/10/2024	N	7.40	205	13.1	<10	9.5	<0.5	0.0005	0.014	0.35	0.37	<0.25	<1.86	<1.86	<1.86	<1.86	<1.86	<1.86	<1.86	<1.86	

- Notes:
- Samples were collected by Sanborn Head on the dates indicated. Samples were analyzed by Eastern Analytical, Inc. (EAI) of Concord, New Hampshire. PFAS samples were analyzed by Pace Analytical (formerly Alpha) of Mansfield, Massachusetts by USEPA Method 537 (modified) with isotope dilution.
 - Only detected analytes which exceed background in one or more sample in the current rounds are presented herein. Refer to the analytical laboratory reports for the complete list of parameters analyzed. Results are compared to their respective background values from time of sampling.
 - pH is presented in standard units (s.u.), specific conductance is presented in microSiemens per centimeter (µS/cm), and temperature is presented in degrees Celsius (C). Indicator parameter and metals results are presented in milligrams per liter (mg/L) which is equivalent to parts per million. Volatile organic compound (VOC) results are presented in micrograms per liter (µg/L) which is equivalent to parts per billion (ppb). Per- and polyfluoroalkyl substances (PFAS) results are presented in nanograms per liter (ng/L) which is equivalent to parts per trillion (ppt).
 - "<" indicates the analyte was not detected above the listed laboratory reporting limit.
"JH" indicates the ion transition ratio is outside of acceptance criteria and the concentration should be considered estimated with a potential high bias.
[3] = number of carbons in the alkyl chain for perfluorinated carboxylic acids (PFCAs). The carbon included in the carboxylic functional group is non-fluorinated and the remaining carbons (i.e., alkyl chain) are fluorinated.
[4S] = number of carbons in the alkyl chain for perfluorinated sulfonic acids (PFSAs). All of the carbons are fluorinated.
 - "GW-1" Groundwater Standards are from the New Hampshire Department of Environmental Services (NHDES) Contaminated Sites Risk Characterization and Management Policy (RCMP) (January 1998, with 2000 through 2018 revisions/addenda). GW-1 Groundwater Standards are intended to be equivalent to the AGQSs promulgated in Env-Or 600 (June 2015 with October 2016, September 2018, September 2019, May 2020, January 2021, and July 2021 amendments). For analytes where GW-1 and AGQS values differ, the values presented in this table reflect the AGQSs in the latest Env-Or 600 update. The AGQS/GW-1 Groundwater Standards are intended to be protective of groundwater as a source of drinking water.

"SMCL" refers to the USEPA Secondary Maximum Contaminant Levels as presented in the National Primary Drinking Water Standards (May 2009). The SMCLs are established as guidelines to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color, and odor. These analytes are not considered to present a risk to human health at the SMCL.
 - Bold values exceed the GW-1/AGQS.
Italic values exceed the SMCL.
Green shading indicates a concentration exceeds current background.
Yellow shading indicates a concentration exceeds background for the first time.
 - Refer to the November 2024 Report text for further information about calculation and selection of background concentrations.

TABLE 2
Initial Background Exceedances - SSI Samples - PFAS - Dec. 2024
North Country Environmental Services, Inc.
Bethlehem, New Hampshire
Permit No. GWP-198704033-B-008

Location	Analyte	Concentration / Value	Previous Max/Min	November 2024 Site Background (refer to Table 1)	GW-1 (AGQS)	SMCL	# of sampling events for analyte
B-934U	pH	6.18 SU	--	6.3 - 8.6 SU	NS	6.5 - 8.5 SU	1
	Specific Conductance	401 μ S/cm	--	125 μ S/cm	NS	NS	1
	Temperature	15.7 C	--	5.6 - 11.9 C	NS	NS	1
	Perfluorobutanoic Acid (PFBA) [3]	41.2	--	<1.5-<2.5 ng/L	NS	NS	1
	Perfluoropentanoic Acid (PFPeA) [4]	68.1	--	<1.5-<2.5 ng/L	NS	NS	1
	Perfluorohexanoic Acid (PFHxA) [5]	90.7	--	<1.5-<2.5 ng/L	NS	NS	1
	Perfluoroheptanoic Acid (PFHpA) [6]	22.8	--	<1.5-<2.5 ng/L	NS	NS	1
	Perfluorooctanoic Acid (PFOA) [7]	19.8	--	<1.5-<2.5 ng/L	12 ng/L	NS	1
	Perfluorobutanesulfonic Acid (PFBS) [4S]	46.3	--	<1.5-<2.5 ng/L	NS	NS	1
	Perfluorohexanesulfonic acid (PFHxS) [6S]	2.40	--	<1.5-<2.5 ng/L	18 ng/L	NS	1
Comments: B-934U was installed in November 2024; December 2024 represents the first sampling event at this location. PFAS detections at this well are similar to those historically recorded at nearby monitoring well MW-803 and are consistent with residual impacts from the former unlined landfill. For example, the PFOA detection at B-934U in November 2024 was within the range of recent concentrations detected at MW-803 (64 ng/l in July 2024). Comparison to background concentrations will be further assessed in the second sampling event at this location in April 2025.							

Notes:

1. The number of sampling events for an analyte includes primary samples and re-samples collected inclusive of the current monitoring period, but does not include field duplicates, if collected.
2. Refer to Appendix A of the November 2024 monitoring report for a discussion of methods used to develop background concentrations.
3. "GW-1" Groundwater Standards are from the New Hampshire Department of Environmental Services (NHDES) Contaminated Sites Risk Characterization and Management Policy (RCMP) (January 1998, with 2000 through 2018 revisions/addenda). GW-1 Groundwater Standards are intended to be equivalent to the AGQSs promulgated in Env-Or 600 (June 2015 with October 2016, September 2018, September 2019, May 2020, January 2021, and July 2021 amendments). For analytes where GW-1 and AGQS values differ, the values presented in this table reflect the AGQSs in the latest Env-Or 600 update. The AGQS/GW-1 Groundwater Standards are intended to be protective of groundwater as a source of drinking water.
 "SMCL" refers to the USEPA Secondary Maximum Contaminant Levels as presented in the National Primary Drinking Water Standards (May 2009). The SMCLs are established as guidelines to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color, and odor. These analytes are not considered to present a risk to human health at the SMCL.
4. ng/l = nanograms per liter, which are equivalent to parts per trillion (ppt)

Article | January 14, 2025

EPA Finalizes Risk On 1,4-Dioxane: What Water Utilities Must Know

Source: Water Online

By Christian Bonawandt

On November 13, 2024, the U.S. Environmental Protection Agency (EPA) finalized its revised [unreasonable risk determination for 1,4-dioxane](#) under the Toxic Substances Control Act (TSCA). This determination, which was announced to little fanfare, is the result of a supplementary risk evaluation released in 2023, which incorporated public comments, peer reviews, and new data on exposure pathways. As a result, EPA has concluded that 1,4-dioxane poses an unreasonable risk to human health, necessitating regulatory action to mitigate these risks. The announcement marks several changes in position on the substance and how water authorities are expected to respond.



What Is The Final Risk Determination?

The EPA's final determination identifies 1,4-dioxane as a significant threat to human health due to cancer and non-cancer risks, primarily through both occupational exposure and drinking water contamination. In particular, the general population is at risk from industrial discharges and consumer product residues contaminating surface water used for drinking.

The final determination expands on the conditions of use (COUs) contributing to unreasonable risks. For example, the revised evaluation aggregates exposure data from multiple sources, including products where 1,4-dioxane occurs as a byproduct. In addition, the EPA has adopted a whole-chemical approach — evaluating the potential risks of an entire chemical substance as it exists in commerce — rather than evaluating individual COUs separately.

Changes From The Draft Determinations

The 2023 draft determination initially identified fewer COUs as contributors to unreasonable risk. For example, surface cleaners were initially considered safe but are now deemed to pose risks to fenceline communities — residential neighborhoods located near industrial facilities — through contaminated drinking water. Similarly, risks from laundry and dishwashing products were originally confined to high-exposure occupational scenarios. The final determination identifies additional risks to the general population from drinking water contamination.

Several factors lead to EPA's shift in stance on 1,4-dioxane. This includes additional data on updated exposure estimates, including data from the New York Department of Environmental Conservation (NYDEC). This data highlighted higher historical concentrations of 1,4-dioxane in consumer products. In addition, EPA updated its methodology, applying a linear low-dose extrapolation model for cancer risk assessment, emphasizing the absence of a threshold for safe exposure. Finally, comments prompted EPA to revisit its earlier assumptions and address broader exposure pathways, including legacy contamination in drinking water.

Increased Focus On Drinking Water

The final determination puts extra emphasis on drinking water contamination. Industrial discharges, down-the-drain disposal, and legacy pollution contribute to significant risks for fenceline communities and the general population. By comparison, the draft evaluation underestimated drinking water as a key exposure pathway.

Under TSCA Section 6(a), the EPA is mandated to propose risk management actions to mitigate the identified unreasonable risks. These actions may include regulating manufacturing, processing, distribution, and disposal activities associated with 1,4-dioxane, as well as coordinating with other EPA offices to address drinking water contamination under the Safe Drinking Water Act (SDWA).

While no new regulations have yet to be proposed in response to this determination, water treatment plants (WTPs) should consider taking proactive measures to mitigate the presence of 1,4-dioxane in public water supplies.

To prepare, water utilities should consider the following steps:

1. **Monitoring and testing.** Implement regular monitoring programs to detect and quantify 1,4-dioxane levels in source water and finished drinking water. This data will help in assessing the extent of contamination and the effectiveness of treatment processes.
2. **Advanced treatment technologies.** Evaluate and, if necessary, upgrade treatment facilities to include advanced oxidation processes (AOPs) or other methods shown to effectively reduce 1,4-dioxane concentrations in water.

- 3. **Source control.** Collaborate with local industries and regulatory agencies to identify and control sources of 1,4-dioxane entering the water supply. This may involve reviewing industrial discharge permits and promoting best practices to minimize releases.
- 4. **Public communication.** Inform the public about the presence of 1,4-dioxane, potential health risks, and the steps being taken to ensure water safety. Transparent communication can help maintain public trust and compliance with any necessary water use advisories.

The EPA’s revised risk determination for 1,4-dioxane reflects a broader and more precautionary approach to assessing chemical risks. However, the incoming presidential administration may prioritize this and other risks differently, leaving a great deal of uncertainty as to what exactly will be required of water authorities in the coming months or years.

Christian Bonawandt is an industrial content writer for Water Online. He has been writing about B2B technology and industrial processes for 23 years.

TABLE D.1
Summary of PFAS Groundwater Analytical Results
North Country Environmental Services, Inc.
Bethlehem, New Hampshire
Permit No. GWP-198704033-B-008

Sample Location	Sample Date Sample Type	Concentrations in ng/L																												
		Perfluoroalkyl Carboxylic Acids									Perfluoroalkyl Sulfonic Acids						Fluorotelomers				Perfluoroalkane Sulfonylamides		Perfluoroalkane Sulfonates							
		Perfluorobutanoic Acid (PFBA) [3]	Perfluoropentanoic Acid (PFPeA) [4]	Perfluorohexanoic Acid (PFHxA) [5]	Perfluoroheptanoic Acid (PFHpA) [6]	Perfluorooctanoic Acid (PFOA) [7]	Perfluorononanoic Acid (PFNA) [8]	Perfluorodecanoic Acid (PFDA) [9]	Perfluoroundecanoic Acid (PFUnA) [10]	Perfluorododecanoic Acid (PFDoA) [11]	Perfluorotridecanoic Acid (PTFA) [12]	Perfluorotetradecanoic Acid (PTEA) [13]	Perfluorobutanesulfonic Acid (PFBS) [14]	Perfluoropentanesulfonic Acid (PFPS) [15]	Perfluorohexanesulfonic Acid (PFHxS) [16]	Perfluoroheptanesulfonic Acid (PFHpS) [17]	Perfluorooctanesulfonic Acid (PFOS) [18]	Perfluorononanesulfonic Acid (PFNS) [19]	Perfluorodecenesulfonic Acid (PFDS) [10S]	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (4-FTS)	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6-FTS)	1H,1H,2H,2H-Perfluorodecenesulfonic Acid (8-ZPTS)	754-91-6	31506-32-8	2991-50-6	2955-31-9	-	-		
MW-601	5/27/2021	N	<4.56	5.82	5.37	11	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<5.33	<4.26	<4.26	<4.26	<5.86	<4.26	<4.26	<4.8	16.1	<20	<4.26	<5.5	11	38.29		
MW-601	7/7/2021	N	5.17	4.91	7.83	7.42	12	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	18.7	<20	<4	<4	12	36.03		
MW-601	9/29/2021	N	5.12	5	7.68	6.64	10.6	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	6.85	<20	<4	<4	10	41.99			
MW-601	11/1/2021	N	4.51	5.14	7.45	6.11	10.7	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	4.3	<20	<4	<4	10.7	38.21			
MW-601	2/22/2022	N	4.59	5.42	7.92	6.15	10.4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<20	<4	10.4	34.48			
MW-601	4/18/2022	N	4.12	4.62	6.21	5.29	11.5	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<20	<4	11.5	31.74			
MW-601	6/8/2022	N	5.25	4.97	7.8	6.92	11.9	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<20	<4	11.9	36.84			
MW-601	11/2/2022	N	4.01	4.38	6.58	5.87	11	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<20	<4	11	31.64			
MW-601	7/11/2023	N	<2.32	2.37	3.34	3.24	11.2	<2.32	<2.32	<2.32	<2.32	4.58	<2.32	<2.32	5.72	<2.32	<2.32	<2.32	<2.32	<2.32	<2.32	<2.32	<2.32	<2.32	<2.32	16.92	30.45			
MW-601	11/6/2023	N	<88.9	<414.3	<27.2	<27.2	<77.3	<22.2	<27.2	<27.2	<27.2	<27.2	<27.2	<27.2	<27.2	<27.2	<27.2	<27.2	<27.2	<27.2	<27.2	<27.2	<27.2	<27.2	<27.2	<27.2	<27.2	NO		
MW-601	12/15/2023	N	2.94	3.45	4.24	3.61	13.7	<1.93	<1.93	<1.93	<1.93	3.02	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	13.7	30.86		
MW-601	4/15/2024	N	<64	<32	<41	<16	>20	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	NO		
MW-601	7/22/2024	N	2.92	3.33	4.1	3.55	<1.96	<1.96	<1.96	<1.96	<1.96	4.77	<1.96	<1.96	2.37	<1.96	<1.96	<1.96	<1.96	<1.96	<1.96	<1.96	<1.96	<1.96	<1.96	<1.96	13.704	37.04		
MW-701	4/23/2018	N	7.14	8.12	10.7	6.93	17.9	<4.04	<4.04	<4.04	<4.04	<4.04	<4.04	<4.04	<4.04	<4.04	<4.04	<4.04	<4.04	<4.04	<4.04	<4.04	<4.04	<4.04	<4.04	<4.04	17.9	50.79		
MW-701	7/10/2018	N	11.4	24.4	28.4	9.54	17.3	<4.24	<4.24	<4.24	<4.24	11	<4.24	<4.24	6.68	<4.24	<4.24	<4.24	<4.24	<4.24	<4.24	<4.24	<4.24	<4.24	<4.24	<4.24	20.6	97.11		
MW-701	7/9/2019	N	9.96	28	24.5	8.67	20.6	<4.29	<4.29	<4.29	<4.29	5.38	<4.29	<4.29	6.65	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	21.58	86.7		
MW-701	11/4/2019	N	11.1	20.1	21.7	6.1	16.4	<4.52	<4.52	<4.52	<4.52	4.65	<4.52	<4.52	6.65	<4.52	<4.52	<4.52	<4.52	<4.52	<4.52	<4.52	<4.52	<4.52	<4.52	<4.52	23.05	86.7		
MW-701	1/7/2020	N	8.44	14.2	23	5.56	14.7	<4.62	<4.62	<4.62	<4.62	4.62	<4.62	<4.62	7.18	<4.62	<4.62	<4.62	<4.62	<4.62	<4.62	<4.62	<4.62	<4.62	<4.62	<4.62	21.88	73.08		
MW-701	4/20/2020	N	7.21	13.7	19.2	6.19	12.7	<4.43	<4.43	<4.43	<4.43	5.86	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	12.7	64.86		
MW-701	7/15/2020	N	7.36	13	12.9	7.14	11.5	<4.41	<4.41	<4.41	<4.41	<4.41	<4.41	<4.41	<4.41	<4.41	<4.41	<4.41	<4.41	<4.41	<4.41	<4.41	<4.41	<4.41	<4.41	<4.41	11.5	57.85		
MW-701	11/2/2020	N	<44.9	9.86	9.42	<4.49	10.3	<4.49	<4.49	<4.49	<4.49	<4.49	<4.49	<4.49	<4.49	<4.49	<4.49	<4.49	<4.49	<4.49	<4.49	<4.49	<4.49	<4.49	<4.49	<4.49	10.3	29.58		
MW-701	1/13/2021	N	8.07	16.4	23.4	<4.4	6.62	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	6.62	54.49		
MW-701	4/19/2021	N	8.58	25.2	36.2	6.77	16	<4.57	<4.57	<4.57	<4.57	<4.57	<4.57	<4.57	7.22	<4.57	<4.57	<4.57	<4.57	<4.57	<4.57	<4.57	<4.57	<4.57	<4.57	<4.57	23.2	108.57		
MW-701	7/16/2021	N	6.88	14.7	25.3	5.76	13.4	<4.54	<4.54	<4.54	<4.54	<4.54	<4.54	<4.54	4.86	<4.54	<4.54	<4.54	<4.54	<4.54	<4.54	<4.54	<4.54	<4.54	<4.54	<4.54	18.26	80.61		
MW-701	11/1/2021	N	6.07	14.1	20.7	<4	12.2	<4	<4	<4	<4	<4	<4	<4	9.04	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	21.24	62.11		
MW-701	1/6/2022	N	9.76	14.2	18.8	3.81	12.6	<1.99	<1.99	<1.99	<1.99	6.48	<1.99	<1.99	<1.99	9.56	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	22.16	75.21		
MW-701	7/12/2022	N	6.63	9.17	10.2	<4	5.63	<4	<4	<4	<4	<4	<4	<4	<4	7.60	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	13.23	40.16		
MW-701	11/2/2022	N	6.23	9.47	11.2	<4	6.8	<4	<4	<4	<4	<4	<4	<4	<4	6.03	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	12.83	39.73		
MW-701	1/12/2023	N	6.75	8.68	9.90	4.04	6.1	<4	<4	<4	<4	<4	<4	<4	<4	4.96	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	11.06	40.43		
MW-701	1/4/2023	N	6.11	6.89	8.09	<4	6.14	<4	<4	<4	<4	<4	<4	<4	<4	5.21	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	11.35	32.44	
MW-701	4/19/2023	N	4.38	5.4	6.55	<4	4.43	<4	<4	<4	<4	<4	<4	<4	<4	5.91	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	10.34	26.67	
MW-701	7/12/2023	N	8.53	12.2	16.8	2.9	5.17	<2.21	<2.21	<2.21	<2.21	3	<2.21	<2.21	<2.21	<2.21	<2.21	<2.21	<2.21	<2.21	<2.21	<2.21	<2.21	<2.21	<2.21	<2.21	7.93	55.33		
MW-701	11/6/2023	N	6.99	9.14	11.7	2.19	4.35	<1.61	<1.61	<1.61	<1.61	<1.61	<1.61	<1.61	<1.61	3.65	<1.55	<1.55	<1.55	<1.55	<1.55	<1.55	<1.55	<1.55	<1.55	<1.55	<1.55	<1.55	10.3	42.31
MW-701	1/2/2024	N	<43.4	10.9	13.4	2.96	5.24	<1.61	<1.61	<1.61	<1.61	<1.61	<1.61	<1.61	<1.61	4.21	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	7.11	36.78		
MW-701	4/16/2024	N	<64	<32	<16	<16	>20	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	NO
MW-701	7/23/2024	N	3.97	4.85	5.98	2.38	5.83	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	5.39	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	11.22	28.4		
MW-802	7/25/2017	N	4.77	5.81	10.7	<4.27	16.7	<4.27	<4.27	<4.27	<4.27	<4.27	<4.27	<4.27	4.34	<4.27	<4.27	<4.27	<4.27	<4.27	<4.27	<4.27	<4.27	<4.27	<4.27	<4.27	21.04	42.32		
MW-802	4/23/2018	N	<4.68	<4.68	6.74	<4.68	<4.68	<4.68	<4.68	<4.68	<4.68	<4.68	<4.68	<4.68	<4.68	<4.68	<4.68	<4.68	<4.68	<4.68	<4.68	<4.68	<4.68	<4.68	<4.68	<4.68	NO	6.74		
MW-802	7/11/2018	N	7.95	9.81	18.3	5.55	11	<4.19	<4.19	<4.19	<4.19	<4.19	<4.19	<4.19	<4.19	6.03	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	11	52.61		
MW-802	7/8/2019	N	8.58	15.8	23.2	8.34	14.2	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	14.2	70.12		
MW-802	7/17/2020	N	6.13	11.4	14.2	6.77	10.3	<4.81	<4.81	<4.81	<4.81	<4.81	<4.81	<4.81	<4.81	<4.81	<4.81	<4.81	<4.81	<4.81	<4.81	<4.81	<4.81	<4.81	<4.81	<4.81	10.3	58.11		
MW-802	7/7/2021	N	8.06	15.4	16.4	5.98	6.47	<4	<4	<4																				

TABLE D.1
Summary of PFAS Groundwater Analytical Results
North Country Environmental Services, Inc.
Bethlehem, New Hampshire
Permit No. GWP-198704033-B-008

			Concentrations in ng/L																											
			Perfluoralkyl Carboxylic Acids										Perfluoralkyl Sulfonic Acids						Fluoroisomers				Perfluoroalkane Sulfonamides		Perfluoroalkane Sulfonyl Substances					
Sample Location	Sample Date	Sample Type	Perfluorobutanoic Acid (PFBA) [3]	Perfluoropentanoic Acid (PFPeA) [4]	Perfluorohexanoic Acid (PFHxA) [5]	Perfluorheptanoic Acid (PFHpA) [6]	Perfluorooctanoic Acid (PFOA) [7]	Perfluorononanoic Acid (PFNA) [8]	Perfluorodecanoic Acid (PFDA) [9]	Perfluoroundecanoic Acid (PFUnA) [10]	Perfluorododecanoic Acid (PFDoA) [11]	Perfluorotridecanoic Acid (PFTra) [12]	Perfluorotetradecanoic Acid (PFTeA) [13]	Perfluorobutanesulfonic Acid (PFBS) [4S]	Perfluoropentanesulfonic Acid (PFPeS) [5S]	Perfluorohexanesulfonic Acid (PFHxS) [6S]	Perfluorheptanesulfonic Acid (PFHpS) [7S]	Perfluorooctanesulfonic Acid (PFOS) [8S]	Perfluorononanesulfonic Acid (PFNS) [9S]	Perfluorodecenesulfonic Acid (PFDS) [10S]	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (4-ZPTS)	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6-ZPTS)	1H,1H,2H,2H-Perfluorodecenesulfonic Acid (8-ZPTS)	Perfluorooctanesulfonamide (FOSA)	N-Methyl perfluorooctanesulfonamide	N-Ethyl Perfluorooctanesulfonamidoacetic Acid (EtFOAA)	N-Methyl Perfluorooctanesulfonamidoacetic Acid (MeFOAA)	Total of Regulated PFAS		
			375-22-4	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	385-76-2	2058-94-8	307-55-1	72629-94-8	376-06-7	373-5	2706-91-4	355-46-4	375-92-8	1763-23-1	68259-12-1	395-77-3	757124-72-4	27619-97-2	39108-34-4	754-91-6	31506-32-8	2991-50-6	2955-31-9	-		
MW-802	7/11/2022	N	8.14	14.8	17	7.83	4.52	<4	<4	<4	<4	<4	<4	4.34	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<20	<4	4.52	56.03		
MW-802	7/12/2023	N	3.32	5.45	8.05	4.33	3.39	<2.28	<2.28	<2.28	<2.28	<2.28	<2.28	3.33	<2.28	3.07	<2.28	<2.28	<2.28	<2.28	<2.28	<2.28	<2.28	<2.28	<4.57	<2.28	6.46	30.94		
MW-802	7/23/2024	N	8.42	17.8	20.1	12	24.2	<2.02	<2.02	<2.02	<2.02	<2.02	<2.02	5.01	<2.02	3.82	<2.02	<2.02	<2.02	<2.02	<2.02	<2.02	<2.02	<2.02	<4.04	<2.02	28.02	91.35		
MW-803	7/25/2017	N	8.51	11.6	17.9	6.32	<4.16	<4.16	<4.18	<4.18	<4.18	<4.18	<4.18	<4.16	<4.18	<4.18	<4.16	<4.18	<4.18	<4.18	<4.18	<4.18	<4.71	10	<20	<4.18	<5.49	7.07	61.91	
MW-803	5/27/2021	N	6.64	10.8	16.1	11.3	7.07	<4.18	<4.18	<4.18	<4.18	<4.18	<4.18	<4.16	<4.18	<4.18	<5.23	<4.18	<4.18	<4.18	<4.18	<4.18	<4.71	10	<20	<4.18	<5.49	7.07	61.91	
MW-803	7/7/2021	N	7.01	11.5	15.9	13.3	7.73	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	17.9	<20	<4	<4	7.73	71.34	
MW-803	9/29/2021	N	5.88	8.63	15.8	6.63	6.35	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	10.8	<20	<4	<4	6.35	54.09	
MW-803	11/1/2021	N	5.34	7.77	14.3	5.5	5.8	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	7.26	<20	<4	<4	5.8	45.97	
MW-803	7/23/2024	N	10	15.4	21.5	25.7	64	<1.98	<1.98	<1.98	<1.98	<1.98	<1.98	4.66	<1.98	8.77	<1.98	<1.98	<1.98	<1.98	<1.98	<1.98	<1.98	<1.98	<3.97	<1.98	72.77	150.03		
B-915U	7/25/2017	N	10.5	13.9	15.1	4.58	8.26	<4.15	<4.15	<4.15	<4.15	<4.15	<4.15	<4.15	<4.15	<4.15	<4.15	<4.15	<4.15	<4.15	<4.15	<4.15	<4.15	<4.15	<4.15	<4.15	8.26	52.34		
B-915U	11/7/2017	N	13	18	19.8	5.58	14.2	<4.58	<4.58	<4.58	<4.58	<4.58	<4.58	8.38	<4.58	<4.58	<4.58	<4.58	<4.58	<4.58	<4.58	<4.58	<4.58	<4.58	<4.58	<4.58	14.2	78.96		
B-915U	4/23/2018	N	12.2	12.6	13.2	5.79	12.6	<4.16	<4.16	<4.16	<4.16	<4.16	<4.16	5.72	<4.16	<4.16	<4.15	<4.16	<4.16	<4.16	<4.16	<4.16	<4.16	<4.16	<4.16	<4.16	12.6	62.11		
B-915U	7/9/2018	N	8.26	10.6	11.5	5	8.26	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	8.26	43.62			
B-915U	7/9/2019	N	8.64	13.8	14.5	5.38	6.54	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	6.54	48.86			
B-915U	7/15/2020	N	8.94	16.3	17.7	5.48	14.5	<4.41	<4.41	<4.41	<4.41	<4.41	<4.41	<4.41	<4.41	<4.41	<4.41	5.29	<4.41	<4.41	<4.41	<4.41	<4.41	6.12	<22	<4.41	<4.41	19.79	74.33	
B-915U	7/16/2021	N	12.4	22.1	25.2	5.62	6.69	<4	<4	<4	<4	<4	<4	19.7	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<20	<4	<4	6.69	83.81	
B-915U	7/12/2022	N	5.79	5.62	7.05	<4	4.4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<20	<4	4.4	32.62		
B-915U	7/11/2023	N	7.67	6.97	11.0	2.69	4.23	<2.41	<2.41	<2.41	<2.41	<2.41	<2.41	5.57	<2.41	<2.41	<2.41	<2.41	<2.41	<2.41	<2.41	<2.41	<2.41	<2.41	<4.82	<2.41	4.23	38.13		
B-915U	7/23/2024	N	16.8	30	29.6	6.47	10.3	<2.02	<2.02	<2.02	<2.02	<2.02	<2.02	17.3	<2.02	<2.02	<2.02	<2.02	<2.02	<2.02	<2.02	<2.02	<2.02	<2.02	<4.04	<2.02	10.3	110.47		
B-915M	11/7/2017	N	<4.40	<4.40	<4.40	<4.40	<4.40	<4.13	<4.40	<4.40	<4.40	<4.40	<4.40	<4.40	<4.40	<4.40	<4.40	<4.40	<4.40	<4.40	<4.40	<4.40	<4.40	<4.40	<4.40	<4.40	ND	ND		
B-915M	4/23/2018	N	<4.13	<4.13	<4.13	<4.13	4.54	<4.13	<4.13	<4.13	<4.13	<4.13	<4.13	<4.13	<4.13	<4.13	<4.13	<4.13	<4.13	<4.13	<4.13	<4.13	<4.13	<4.13	<4.13	ND	ND	4.54	4.54	
B-915M	7/9/2018	N	<4.23	<4.23	<4.23	<4.23	<4.23	<4.23	<4.23	<4.23	<4.23	<4.23	<4.23	<4.23	<4.23	<4.23	<4.23	<4.23	<4.23	<4.23	<4.23	<4.23	<4.23	<4.23	<4.23	ND	ND	ND	ND	
B-915M	7/9/2019	N	<4.24	<4.24	<4.24	<4.24	<4.24	<4.24	<4.24	<4.24	<4.24	<4.24	<4.24	<4.24	<4.24	<4.24	<4.24	<4.24	<4.24	<4.24	<4.24	<4.24	<4.24	<4.24	<4.24	ND	ND	ND	ND	
B-915M	7/15/2020	N	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	ND	ND	ND	ND	
B-915M	7/16/2021	N	<4	4.13	5.4	<4	4.94	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<20	<4	<4	<4	4.94	14.47
B-915M	7/12/2022	N	4.05	5.37	5.78	<4	4.54	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<20	<4	<4	<4	4.54	19.74
B-915M	7/11/2023	N	3.33	4.67	4.97	<2.21	4.20	<2.21	<2.21	<2.21	<2.21	<2.21	<2.21	2.44	<2.21	<2.21	<2.21	<2.21	<2.21	<2.21	<2.21	<2.21	<2.21	<2.21	<4.41	<2.21	4.2	19.61		
B-915M	7/23/2024	N	4.22	4.28	4.69	<2.04	4.2	<2.04	<2.04	<2.04	<2.04	<2.04	<2.04	2.5	<2.04	<2.04	<2.04	<2.04	<2.04	<2.04	<2.04	<2.04	<2.04	<2.04	<2.04	<2.04	4.2	19.89		
B-915D	11/7/2017	N	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	ND	ND	ND	ND	
B-915D	4/23/2018	N	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	ND	ND	ND	ND	
B-916U	7/23/2024	N	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	
B-916M	7/23/2024	N	3.39	3.29	4.27	<1.96	2.14	<1.96	<1.96	<1.96	<1.96	<1.96	<1.96	<1.96	<1.96	<1.96	<1.96	<1.96	<1.96	<1.96	<1.96	<1.96	<1.96	<1.96	<1.96	<1.96	2.14	13.09		
B-917U	7/22/2024	N	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	<1.94	
B-909	7/22/2024	N	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	<1.51	
B-918U	7/9/2018	N	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	<4.35	ND	ND	ND	ND	
B-918U	8/27/2018	N	<4.31	<4.31	<4.31	<4.31	<4.31	<4.31	<4.31	<4.31	<4.31	<4.31	<4.31	<4.31	<4.31	<4.31	<4.31	<4.31	<4.31	<4.31	<4.31	<4.31	<4.31	<4.31	<4.31	ND	ND	ND	ND	

TABLE D.1
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Bethlehem, New Hampshire
Permit No. GWP-198704033-B-008

[illegible]

TABLE D.1
Summary of PFAS Groundwater Analytical Results
North Country Environmental Services, Inc.
Bethlehem, New Hampshire
Permit No. GWP-198704033-B-008

		Concentrations in ng/L																														
Sample Location	Sample Date Sample Type	Perfluoroalkyl Carboxylic Acids						Perfluoroalkyl Sulfonic Acids						Fluorotelomers				Perfluoroalkane Sulfonamides		Perfluoroalkane Sulfonyl Substances												
		Perfluorobutanoic Acid (PFBA) [3]	Perfluoropentanoic Acid (PFPeA) [4]	Perfluorohexanoic Acid (PFHxA) [5]	Perfluoroheptanoic Acid (PFHpA) [6]	Perfluorooctanoic Acid (PFOA) [7]	Perfluorononanoic Acid (PFNA) [8]	Perfluorodecanoic Acid (PFDA) [9]	Perfluoroundecanoic Acid (PFUnA) [10]	Perfluorododecanoic Acid (PFDoA) [11]	Perfluorotridecanoic Acid (PFTra) [12]	Perfluorotetradecanoic Acid (PFTeA) [13]	Perfluorobutanesulfonic Acid (PFBS) [4S]	Perfluoropentanesulfonic Acid (PPFS) [5S]	Perfluorohexanesulfonic Acid (PFHS) [6S]	Perfluoroheptanesulfonic Acid (PFHPs) [7S]	Perfluorooctanesulfonic Acid (PFOS) [8S]	Perfluorononanesulfonic Acid (PFNS) [9S]	Perfluorodecenesulfonic Acid (PFPS) [10S]	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (4:FTS)	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:FTS)	1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:FTS)	Perfluorooctanesulfonamide (FOSA)	N-methyl perfluorooctane sulfonamide	N-Ethyl Perfluorooctanesulfonamidoacetic Acid (EtFOSA)	N-Methyl Perfluorooctanesulfoniomidoacetic Acid (MeFOSA)	Total of Regulated PFAS					
		375-22-4	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	385-76-2	2058-94-8	307-55-1	72629-94-8	376-06-7	373-5	2706-91-4	355-46-4	375-92-8	1763-23-1	68259-12-1	395-77-3	757124-72-4	27619-97-2	39108-34-4	754-91-6	31506-32-8	2991-50-6	2955-31-9	-					
B-919U	4/23/2018	N	7.88	8.46	6.52	4.37	38.4	<4.12					4.37	<4.12	<4.12	<4.12	<4.12										34.4	47.02				
B-919U	7/19/2018	N	9.06	9.07	13.12	5.67	20.6	<4.58					<4.58	<4.58	<4.58	<4.58	<4.58										20.6	52.97				
B-919U	7/19/2020	N	9.96	9.07	9.88	5.74	14.1	<4.3					<4.38	<4.38	<4.38	<4.38	<4.38										14.1	38.79				
B-919U	7/13/2020	N	6.31	9.14	10.4	<4.18	24.5	<4.19	<4.38	<4.38	<4.38	<4.38	4.36	<4.19	<4.19	<5.74	<4.19	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	25.4	44.34				
B-919U	5/27/2021	N	5.1	7.98	<4.18	24.5	<4.19	<4.38	<4.38	<4.38	<4.38	<4.38	4.61	<4.19	<4.19	<5.74	<4.19	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	24.5	48.84				
B-919U	7/7/2021	N	7.78	9.41	11.7	6.38	27.9	<4.19	<4.38	<4.38	<4.38	<4.38	4.61	<4.19	<4.19	<5.74	<4.19	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	27.9	60				
B-919U	9/29/2021	N	7.31	8.41	11.4	6.29	24.5	<4.19	<4.38	<4.38	<4.38	<4.38	4.61	<4.19	<4.19	<5.74	<4.19	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	24.5	50.9				
B-919U	11/1/2021	N	6.32	6.96	9.31	6.14	23.7	<4.19	<4.38	<4.38	<4.38	<4.38	13	<4.19	<4.19	<5.74	<4.19	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	23.7	52.03				
B-919U	2/22/2022	N	15.7	17.2	25	9.88	25.4	<4.19	<4.38	<4.38	<4.38	<4.38	13	<4.19	<4.19	<5.74	<4.19	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	25.4	88.48				
B-919U	4/18/2022	N	10.8	13.1	15.2	8.81	22.0	<4.19	<4.38	<4.38	<4.38	<4.38	8.91	<4.19	<4.19	<5.74	<4.19	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	22	81.82				
B-919U	6/9/2022	N	9	9.46	12.8	8.68	20.1	<4.19	<4.38	<4.38	<4.38	<4.38	9.93	<4.19	<4.19	<5.74	<4.19	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	20.1	60.97				
B-919U	7/11/2022	N	7.6	8.61	12.4	10.2	27.1	<4.19	<4.38	<4.38	<4.38	<4.38	10.4	<4.19	<4.19	<5.74	<4.19	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	27.1	76.31				
B-919U	11/2/2022	N	10.8	15.6	19.9	13.1	23.4	<4.19	<4.38	<4.38	<4.38	<4.38	14.8	<4.19	<4.19	<5.74	<4.19	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	23.4	97.6				
B-919U	7/11/2023	N	5.46	6.09	11.2	8.44	23.7	2.80	<4.19	<4.38	<4.38	<4.38	9.56	<4.19	3.19	<4.19	<4.19	<4.19	<4.19	<4.19	<4.19	<4.19	<4.19	<4.19	<4.19	<4.19	29.69	69.88				
B-919U	7/22/2024	N	8.7	5.74	8.31	6.61	32.3	3.47	<4.38	<4.38	<4.38	<4.38	9.56	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	<4.38	35.77	74.69				
B-919M	11/7/2017	N	<4.76	6.16	<4.76	<4.76	<4.76						<4.76	<4.76	<4.76	<4.76	<4.76										6.16					
B-919M	4/23/2018	N	<4.2	4.5	<4.2	<4.2	<4.2						<4.2	<4.2	<4.2	<4.2	<4.2										ND	9.25				
B-919M	7/10/2018	N	<4.5	<4.5	<4.5	<4.5	<4.5						<4.5	<4.5	<4.5	<4.5	<4.5										ND	ND				
B-919M	7/19/2019	N	<4.44	<4.44	<4.44	<4.44	<4.44						<4.44	<4.44	<4.44	<4.44	<4.44										ND	ND				
B-919M	7/15/2020	N	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	<4.29	ND	ND			
B-919M	5/27/2021	N	<4.03	<4.03	<4.03	<4.03	<4.03	<4.03	<4.03	<4.03	<4.03	<4.03	<4.03	<4.03	<4.03	<4.03	<4.03	<4.03	<4.03	<4.03	<4.03	<4.12	<4.12	<4.03	<4.29	<4.03	<4.29	ND	ND			
B-919M	7/7/2021	N	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ND	ND			
B-919M	9/29/2021	N	<4	<4	<4	<4	5.51	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	5.51	5.51	ND	ND		
B-919M	11/2/2021	N	<4	<4	<4	<4	5.97	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ND	ND	ND	ND	
B-919M	2/22/2022	N	<4	<4	<4	<4	5.97	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	5.97	5.97	ND	ND	
B-919M	4/18/2022	N	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ND	ND	ND	ND	
B-919M	6/8/2022	N	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ND	ND	ND	ND	
B-919M	11/2/2022	N	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ND	ND	ND	ND	
B-919M	7/12/2022	N	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ND	ND	ND	ND	
B-919M	7/22/2024	N	<1.97	<1.97	<1.97	<1.97	<1.97	<1.97	<1.97	<1.97	<1.97	<1.97	<1.97	<1.97	<1.97	<1.97	<1.97	<1.97	<1.97	<1.97	<1.97	<1.97	<1.97	<1.97	<1.97	<1.97	<1.97	ND	ND	ND	ND	
B-919D	11/7/2017	N	<4.59	<4.59	<4.59	<4.59	<4.59						<4.59	<4.59	<4.59	<4.59	<4.59											ND	ND	ND	ND	
B-919D	4/23/2018	N	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22	<4.22
B-919D	7/18/2019	N	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26	<4.26
B-919D	5/27/2021	N	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1
B-919D	7/7/2021	N	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
B-919D	9/29/2021	N	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
B-919D	11/1/2021	N	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
B-919D	2/22/2022	N	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
B-919D	4/18/2022	N	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
B-919D	6/8/2022	N	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
B-919D	11/2/2022	N	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
B-919D	7/1																															

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