

Maine WWTP Effluent PFAS Study

Judy Bruenjes, Jim Crowley, Brett Goodrich DEP DWQM Core Study Team October, 2023

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

Protecting Maine's Air, Land and Water

P.L. 2021, Chapter 641 April 20, 2022

"An Act to Prevent Further Contamination of Waters of the State with so-called Forever Chemicals"

P.L. 2021, Chapter 641 April 20, 2022

...<u>the Department by written notification may require a</u> person licensed by the department to discharge wastewater to groundwater or any waters of the State to sample the effluent discharged for perfluoroalkyl and polyfluoroalkyl substances and to report the sample data to the department.

Upon receipt of the written notification and as directed by the department, the person shall conduct the required sampling of the effluent for perfluoroalkyl and polyfluoroalkyl substances and report the sample data to the department.

The Study

- Planning and project development began in <u>January</u>, 2022; statutory authority granted via PL 2021 on April 20th.
- <u>EPA Method 537.1 M with isotope dilution</u> was our method of choice *as determined at that time*. This provided data for 28 PFAS species, including the 6 (8) most relevant going forward. Grab sampling was used. Alpha Analytical was chosen to perform the analyses. Note; *EPA Method 1633 duplicate samples were taken during the July sampling event at all of our POTWs*.
- <u>105 public and 19 private facilities</u> were selected, representing a comprehensive cross-section of our direct, spray irrigation, and in-ground dischargers, including a few indirect dischargers.
- We determined that facility personnel would do (or arrange for) their own sampling. Subsequently, in-person DEP training sessions were held in each of our 4 regional offices, additional individual training took place, and relevant materials were made available from July – September, 2022. DEP covered the analytical and currier costs for POTWs, while private WWTPs picked those costs. <u>All</u> of the plants in the study used Alpha Analytical.

The Study

- There are currently no *promulgated* Federal or State of Maine PFAS ambient water quality criteria for human health, nor for aquatic life.
- As of right now, there is no *promulgated* wastewater analytical method for PFAS in 40 CFR Part 136. When finalized, EPA Method 1633 will be that method.
- There is now a *Maine interim drinking water standard* for 6 PFAS compounds.
- Currently, a <u>federal drinking water standard</u> for 6 PFAS compounds is being considered, 4 of which overlap with the Maine interim PFAS species.
- We employed the "Maine 6" for benchmarking and comparative purposes in the Study, though all of the analytical results are archived.



Drinking Water PFAS Standards

The interim "Maine 6" Standard:

The cumulative total of the concentrations of PFOA, PFOS, PFHxS, PFNA, PFHpA, and PFDA may not exceed **20 ng/l** (ppt).

The proposed Federal Standard:

PFOA < or = 4 ng/l PFOS < or = 4 ng/l and the Hazard Index (all ng/l): [HFPO-DA (GenX)] + [PFBS] + [PFHxS] + [PFNA] < or = 1.0 10 2000 9 10

DEP DWQM Long Term Goal

The Department's intent is to manage PFAS in MEPDES/WDL permits <u>the same as it would any other regulated toxic substance</u>. Discharges will be addressed relative to Aquatic Life WQC, Human Health WQC, and TMDL calculations if necessary for surface water discharges, and potential drinking water standards considerations for discharges to groundwater.

EPA has proposed fresh water <u>Acute</u> and <u>Chronic</u> WQC: 49 mg/l & 0.094 mg/l for PFOA, 3 mg/l & 0.0084 mg/l for PFOS, respectively.

Quantitative Human Health WQC will be proposed by EPA, most likely for at least part (PFOA and PFOS) of the same 6 PFAS entities that are listed in the Proposed Federal Drinking Water Standard.



The majority of the effluent data we planed on collecting from all of our Phase I facilities was gathered between September 2022 and August 2023. Groundwater data are available for Q3 and Q4 of 2022 and Q1 and Q2 of 2023.

For this presentation we are providing <u>facility average</u> "Maine Sum of 6" concentration and loading results in a generalized format, without specific reference to any given facility. Loading results are based on the Study state-wide total of public and private contributions.

Phase 1- Data Usability

- Approximately 1,100 samples collected
 September 2022 through September 2023
- Over 30,000 individual PFAS compound results
- 33 Rejected results
- 77 Non-reported results

Average Public Facility Benchmark "Sum of 6" Concentrations, ng/l



MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

Average Public Facility Benchmark "Sum of 6" Loadings, % Total



MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

Public Wastewater Treatment Plant effluent "Maine 6", ng/l (ppt):Maximum facility average836 (study maximum sample = 1650)Average, overall49Median20Minimum6.6

Public Wastewater Treatment Plant effluent discharge loading, as a <u>% of</u> <u>the total mass discharge from public Study participants:</u>

Maximum	11.5%
Average	0.7%
Median	0.12%
Minimum	≈ 0%

Public Spray Irrigation Plant groundwater Monitoring Well "Maine 6", ng/l (ppt):

Maximum facility average **24.5** (study maximum sample = **29**)

Average, overall	4.9
Median	1.4
Minimum	0.3



Private Wastewater Treatment Plant effluent "Maine 6", ng/l (ppt):

Maximum facility average 217

Average, overall	54
Median	16
Minimum	3.7

Private Wastewater Treatment Plant effluent discharge loading, as a <u>% of</u> <u>the total mass discharge from Study private participants:</u>

Maximum	13.0%
Average	2.2%
Median	0.2%
Minimum	≈ 0%

- The Intent of the Phase II Study is to take a limited selection 12 - of the participants in the Phase I Effluent Sampling Study and do a more detailed analysis of their collection system and Industrial User PFAS sources.
- Understanding community impacts will facilitate potential future approaches to addressing MEPDES Permit PFAS limits, if & when the need arises.



We've selected our voluntarily participating public facilities based on a number of factors, including:

- High effluent PFAS concentrations;
- **High effluent PFAS loadings** there is a good (but not complete) correlation between these two considerations;
- Community size & complexity, and a diversity of inputs;
- Favoring Pretreatment communities where appropriate, due to existing plant expertise & staffing resources;
- Other unique situational considerations.

The Department and POTW personnel are cooperatively developing sampling plans that will provide a PFAS profile in each participating community. Sample kits with custom printed COCs are provided for each sample point.

Method 537.1 M will be used again, with some Method 1633 duplicate sampling bottles being distributed throughout each community's sampling kits*

Plant personnel will again be responsible for executing the sampling using appropriate technique. Typically, sampling will take place two days a week, up to 5 or 6 sample points a day, over a 2 – 3 week period. One equipment blank will be taken each sampling day.

Custom Chain of Custody

CHAI	N OF CUSTO Maine DEP-	DY PA	AGE L PFAS	1 Proje	OF ect Same	1 oles		Date Rec'd in I	Lab:	2	AL	PHA Job #:
320 Forbes Blvd Mansfield MA	Project Information	H			Dist			Contract and Billin	ng Info	C rmation	44	-390019
02048 Tel: (508) 822-9300					Discharg	e Schedule: F	Routine	ALPHA Contract	Num	ber: 06	A2022071	4*137
	MEPDES # (Client P	roject #): ME	0101443		_			Invoice to: Patrici	a.L.Ko	rbet@m	aine.gov.	
of Environmental	EGAD Site #: 4901	9						Brett.A.Goodrich	emain by per	e.gov mittee b	efore subn	itting samples
odrich	Project Manager:	Brett Goodrich										
	Facility Contact: Ch	uck Annlehee			Dhave 7			Daily Flow (MGD)	for 24	-hour pe	eriod prior (o sampling
Zip Code: 04901	Facility Email: chuc	k@watermiali	tume com		Phone: 2	07-380-4261		0,112		MGD		
034	Lab report copies to	o: den.edd@u	maine gov	Kolly Por	alityanocompl	lance@roadr	unner.com	Charlettertert				
drich@maine.gov	Brett.A.Goodrich@	maine.gov: : 1	hartlandw:	stowater	Rins@maine.p	(ov;		Check the box bel	ow for	any eve	ents that oc	curred within
				stewater	Seman.com			24 nours of sampl	ing:		1	
Sample F (Ex. Outfail 001-	Point Name A, Lagoon Effluent	Sample Date	Sample Time	Sample Matrix/	Date Due: Sample Location	Collection Method	Treatment Status	Analysis: Main Compou	e 28 P	FAS	Total #	Sample
Outfall 001.A	e Spray)	-		Туре			5700-5000 T.	(Isotope Dilution)		connents.		
Oddan ODT-A		1002		ww	EF	GS	Т	X		2		
Preservative: Tz:	Trizma A=None	Sampled b	Y: DU	D				Container Type:	P	All san	nples subie	t to Alpha's
			211	on re	433		/	Preservative:	Tz	terms	and conditi	ons.
Relinquished by:	- 6	6		Date/ Ti	me: 3 <i>10</i> 34	Received b	¥:	ALL	1		Date/ Tin 7-13-2	ne: 13 /034/
	CHAI 320 Forbes Blvd Mansfield MA 02048 Tel: (508) 822-9300 c. of Environmental odrich Zip Code: 04901 034 drich@maine.gov Gample F (Ex. Outfall 001-A Preservative: Tz: 0 = 0ther Relinquished by: Relinquished by:	CHAIN OF CUSTO Maine DEP- 320 Forbes Blvd Mansfield MA 02048 Tel: (508) 822-9300 Project Information Facility Name: Har 02048 Tel: (508) 822-9300 MEPDES # (Client P c of Environmental EGAD Site #: 49019 odrich Project Manager: I Facility Contact: Ch Facility Contact: Ch Zip Code: 04901 Facility Email: chuc 034 Lab report copies t ddrich@maine.gov Brett. A. Goodrich@ Outfall 001-A, Lagoon Effluent Before Spray) Outfall 001-A Preservative: 0 = Other Tz= Trizma A=None 0 = Other Relinquished by: Tz= Trizma A=None	CHAIN OF CUSTODY Maine DEP- LD1913 320 Forbes Blvd Mansfield MA 02048 Tel: (508) 822-9300 Project Information: Facility Name: Hartland WWTF MEPDES # (Client Project #): ME MEPDES # (Client Project #): ME c. of Environmental EGAD Site #: 49019 odrich Project Manager: Brett Goodrich Facility Contact: Chuck Applebee Zip Code: 04901 Facility Email: chuck@waterqual 034 Lab report copies to: dep.edd@ drich@maine.gov Brett.A.Goodrich@maine.gov; ; I Version Sample Point Name (Ex. Outfall 001-A, Lagoon Effluent Before Spray) Sample Date Outfall 001-A 7-12-33 Ic02- Preservative: Tz= Trizma A=None 0 = Other Sampled b Relinquished by: Market by: Manager: Market by:	CHAIN OF CUSTODY PAGE Maine DEP- LD1911 PFAS 320 Forbes Bivd Mansfield MA 02048 Tel: (508) 822-9300 Project Information: Facility Name: Hartland WWTF Tel: (508) 822-9300 MEPDES # (Client Project #): ME0101443 c. of Environmental EGAD Site #: 49019 odrich Project Manager: Brett Goodrich Facility Contact: Chuck Applebee Zip Code: 04901 Facility Email: chuck@waterqualityme.com 034 Lab report copies to: dep.edd@maine.gov; Brett.A.Goodrich@maine.gov; ; hartlandwa Merchaine.gov Brett.A.Goodrich@maine.gov; ; hartlandwa Martine Sample Point Name (Ex. Outfall 001-A, Lagoon Effluent Before Spray) Sample Date Sample Time Outfall 001-A 7-12-33 1/002 Image: Sample Date Sample Preservative: Tz= Trizma A=None Sampled by: Martine Sample Date Relinquished by: Martine Sample Date Sampled by:	CHAIN OF CUSTODY PAGE 1 Maine DEP- LD1911 PFAS Project 320 Forbes Blvd Project Information: Mansfield MA 02048 Facility Name: Hartland WWTF Tel: (508) 822-9300 MEPDES # (Client Project #): ME0101443 And Facility Name: Hartland WWTF MEDIOI 443 Code: 04901 Facility Contact: Chuck Applebee Zip Code: 04901 Facility Contact: Chuck Applebee Zip Code: 04901 Facility Email: chuck@waterqualityme.com ; waterqualityme.gov; Kelly.Per Odrich@maine.gov Brett.A.Goodrich@maine.gov; ; hartlandwastewaterqualityme.com ; waterqualityme.gov; celly.Per Mdrich@maine.gov Brett.A.Goodrich@maine.gov; ; hartlandwastewaterqualityme.com ; waterqualityme.gov; ; hartlandwastewaterqualityme.gov; ;	CHAIN OF CUSTODY PAGE 1 OF 320 Forbes Bivd Maine DEP- LD1911 PFAS Project Samp 320 Forbes Bivd Project Information: Discharg 320 Forbes Bivd Project Information: Discharg 320 Forbes Bivd Facility Name: Hartiand WWTF Discharg 320 Forbes Bivd Mansfield MA Discharg 320 Forbes Bivd Facility Name: Hartiand WWTF Discharg 320 Forbes Bivd MEPDES # (Client Project #): ME0101443 Discharg and field MA Code: 04901 Facility Contact: Chuck Applebee Phone: 2 21p Code: 04901 Facility Email: chuck@waterqualityme.com ; waterqualityandcomp Discharg 324 Lab report copies to: dep.edd@maine.gov; Kelly.Perkins@maine.gov Brett.A.Goodrich@maine.gov; ; hartlandwastewater@gmail.com 4drich@maine.gov Brett.A.Goodrich@maine.gov; ; hartlandwastewater@gmail.com Imarin/ § Sample Point Name Sample Sample Sample (Ex. Outfall 001-A 7-12:33 WW EF 0utfall 001-A 72:33 WW EF Preservative: Tz= Trizma A=None Date / Time: Date / Time: 0 = Other	CHAIN OF CUSTODY PAGE 1 OF 1 320 Forbes Blvd Mainee DEP- LD19111 PFAS Project Samples 320 Forbes Blvd Project Information: Discharge Schedule: I Mansfield MA Pacility Name: Hartland WWTF Discharge Schedule: I Facility Name: Hartland WWTF Discharge Schedule: I MEPDES # (Client Project #): ME0101443 EGAD Site #: 49019 Odrich Project Manager: Brett Goodrich Phone: 207-380-4261 Facility Contact: Chuck Applebee Phone: 207-380-4261 Zip Code: 04901 Facility Email: chuck@watergualityme.com ; watergualityandcomplance@roadr 324 Lab report copies to: dep.edd@maine.gov; ; hartlandwastewater@gmail.com Wirch@maine.gov Brett.A.Goodrich@maine.gov; ; hartlandwastewater@gmail.com Varial 001-A, Lagoon Effluent Date Time Sample Sample Collection Method Point Name Sample Sample Sample Collection Method 0utfall 001-A 7-12-33 WW EF GS Preservative: Tz= Trizma A=None Sampled by: Date/ Time: Received by Relinquished by: Date/ Time: Received by <td>CHAIN OF CUSTODY PAGE 1 OF 1 320 Forbes Blvd Mansfield MA 02048 Project Information: Facility Name: Hartland WWTF Discharge Schedule: Routine Tel: (508) 822-9300 MEPDES # (Client Project #): ME0101443 Discharge Schedule: Routine Tel: (508) 822-9300 MEPDES # (Client Project #): ME0101443 Discharge Schedule: Routine Soft Environmental EGAD Site #: 49019 Phone: 207-380-4261 20p Code: 04901 Facility Contact: Chuck Applebee Phone: 207-380-4261 21p Code: 04901 Facility Email: chuck@waterqualityme.com ; waterqualityandcompliance@roadrunner.com 034 Lab report copies to: dep.edd@maine.gov; ; hartlandwastewater@gmail.com Variable Point Name Esample Sample Collection Treatment (Ex. Outfall 001-A, Lagoon Effluent Date Sample Sample Collection Treatment Sample Point Name Sample Sample Sample Sample Collection Treatment (Dutfall 001-A 7-12-733 U/O/2 WW EF GS T Preservative: Tz = Trizma A=None Sampled by: Date/ Time: Received by: Pres-23 /034 W/W <td< td=""><td>CHAIN OF CUSTODY PAGE 1 OF 1 Date Rec'd in 1 320 Forbes Bivd Manine DEP- LD1911 PFAS Project Samples 7/14/ 7/14/ 320 Forbes Bivd Project Information: Contract and Billin Oppose Contract and Billin ALPHA Contract 320 Forbes Bivd Manifed MA Project Information: Contract and Billin Oppose Contract and Billin ALPHA Contract 320 Forbes Bivd MEPDES # (Client Project #): ME0101443 Discharge Schedule: Routine ALPHA Contract 4 Meroles # 49019 Meroles # 49019 Invoice to: Patrice Brett A Goodrich Brett A Goodrich 5 Facility Contact: Chuck Applebee Phone: 207-380-4261 Op /// 20 Op /// 20 21p Code: 04901 Facility Contact: Chuck Applebee Phone: 207-380-4261 Op /// 20 Op /// 20 34 Lab report copies to: dep.edd@maine.gov; Kelly Perkins@maine.gov Watersymathe and and time.gov; Septage Received gmail.com Zhours of sample Date New content of the completed in pre-approxed) 34 Lab report copies to: dep.edd@maine.gov; Kelly Perkins@maine.gov Sample Sample Sample Sample Sample Sample Sample Septage Received in conton firmed if pre-approxed) Septage Receive</td><td>CHAIN OF CUSTODY PAGE 1 OF 1 Maine DEP- LD1911 PFAS Project Samples 7/14/2 320 Forbes Blvd Mansfield MA 02048 Project Information: 0 Felify Name: Hartland WWTF Discharge Schedule: Routine ALPHA Contract Num MEPDES # (Client Project #): ME0101443 Invoice to: Patricia LKO Brott Acordich@main Invoice to: Patricia LKO Brott Acordich@main . of Environmental EGAD Site #: 49019 To be completed bry project Project Manager: Brett Goodrich Phone: 207-380-4261 Discharge Container and Billing Mide ALPHA Contract Num . of Environmental EGAD Site #: 49019 To be completed bry project Midch@maine.gov; Kellx.Perkins@maine.gov; drich@maine.gov Phone: 207-380-4261 Discharge Container and Billing Mide Outfall Container and Billing Mide Alp Flow (MGD) for 24 O. [12. . Of Environmental EGAD Site #: 49019 To be completed bry project Midebare Check the box below for 24 hours of sampling: . Of Environmental EGAD Site #: 49019 To mid-Acound Times: Discharge Container and Billing Mide Outfall 001-A. Check the box below for 24 hours of sampling: . Outfall 001-A Sample Sample Sample Sample Collection Treatment Status Analysis: Maine 28 P Compounds (Isotope Dilution (Isotope Dilution (Isotope Dilution) . O</td><td>CHAIN OF CUSTODY PAGE 1 OF 1 Date Rec'd in Lab: 320 Forbes Bivd Mansiel MA 02048 Project Information: Contract and Billing Hinformation: Contract and Billing Hinformation: Contract and Billing Hinformation: Fellity Name: Hartland WWTF Discharge Schedule: Routine ALPHA Contract Number: 06 MEPDES # (Client Project #): MED101443 Invoice to: Patrical LKorbet@m Brett A Goodrich@maine.gov; Invoice to: Patrical LKorbet@m Brett A Goodrich@maine.gov; Date Recive Alpha Contract Number: 06 20 for Contract and Billing Hinformation: Facility Contact: Chuck Applebee Phone: 207-380-4261 Date Necive@maine.gov; 21p Code: 04901 Facility Contact: Chuck Applebee Phone: 207-380-4261 Date Necive@maine.gov; 21p Code: 04901 Facility Contact: Chuck Applebee Phone: 207-380-4261 Date Necive@maine.gov; 21p Code: 04901 Facility Contact: Margemaine.gov; Kelly Perkins@maine.gov; Check the box below for any every 21p Code: 04901 Facility Contact: Chuck Applebee Phone: 207-380-4261 Teck the box below for any every 21p Code: 04901 Facility Contact: Margemaine.gov; Kelly Perkins@maine.gov; Check the box below for any every 21p Code: 04901 Sample Sample</td><td>CHAIN OF CUSTODY PAGE 1 OF 1 Date Rec'd in Lab: AL 320 Forbes BMd Mained DEP- LD1911 PFAS Project Samples Date Rec'd in Lab: 1/2/2/2/3 1/2 320 Forbes BMd Mained MA Facility Name: Hartland WWTF Discharge Schedule: Routine Contract and Billing Information: ALPHA Contract Number: 06A2022071 ALPHA Contract Number: Facility Name: Hartland WWTF Discharge Schedule: Routine ALPHA Contract Number: 06A2022071 ALPHA Contract Number: 06 Environmental EGAD Site #: 49019 Invoice to: Patricia LKorbet@maine.gov. Odrich Project Manager: Brett Goodrich Facility Contact: Chuck Applebee Phone: 207-380-4261 Daily Flow (MGD) for 24-hour period prior 1/2 of 1/2 MdD 21p Code: 04901 Facility Contact: Chuck Applebee Phone: 207-380-4261 Daily Flow (MGD) for 24-hour period prior 1/2 of 1/2 MdD 21p Code: 04901 Facility Contact: Chuck Applebee Phone: 207-380-4261 Check the box below for any events that or 2/4 hour of ampling: MdT 21p Code: 04901 Facility Contact: Chuck Applebee Phone: 207-380-4261 Check the box below for any events that or 2/4 hour of ampling: Mdt Check the box below for any events that or 2/4 hour of ampling: Mdt Container</td></td<></td>	CHAIN OF CUSTODY PAGE 1 OF 1 320 Forbes Blvd Mansfield MA 02048 Project Information: Facility Name: Hartland WWTF Discharge Schedule: Routine Tel: (508) 822-9300 MEPDES # (Client Project #): ME0101443 Discharge Schedule: Routine Tel: (508) 822-9300 MEPDES # (Client Project #): ME0101443 Discharge Schedule: Routine Soft Environmental EGAD Site #: 49019 Phone: 207-380-4261 20p Code: 04901 Facility Contact: Chuck Applebee Phone: 207-380-4261 21p Code: 04901 Facility Email: chuck@waterqualityme.com ; waterqualityandcompliance@roadrunner.com 034 Lab report copies to: dep.edd@maine.gov; ; hartlandwastewater@gmail.com Variable Point Name Esample Sample Collection Treatment (Ex. Outfall 001-A, Lagoon Effluent Date Sample Sample Collection Treatment Sample Point Name Sample Sample Sample Sample Collection Treatment (Dutfall 001-A 7-12-733 U/O/2 WW EF GS T Preservative: Tz = Trizma A=None Sampled by: Date/ Time: Received by: Pres-23 /034 W/W <td< td=""><td>CHAIN OF CUSTODY PAGE 1 OF 1 Date Rec'd in 1 320 Forbes Bivd Manine DEP- LD1911 PFAS Project Samples 7/14/ 7/14/ 320 Forbes Bivd Project Information: Contract and Billin Oppose Contract and Billin ALPHA Contract 320 Forbes Bivd Manifed MA Project Information: Contract and Billin Oppose Contract and Billin ALPHA Contract 320 Forbes Bivd MEPDES # (Client Project #): ME0101443 Discharge Schedule: Routine ALPHA Contract 4 Meroles # 49019 Meroles # 49019 Invoice to: Patrice Brett A Goodrich Brett A Goodrich 5 Facility Contact: Chuck Applebee Phone: 207-380-4261 Op /// 20 Op /// 20 21p Code: 04901 Facility Contact: Chuck Applebee Phone: 207-380-4261 Op /// 20 Op /// 20 34 Lab report copies to: dep.edd@maine.gov; Kelly Perkins@maine.gov Watersymathe and and time.gov; Septage Received gmail.com Zhours of sample Date New content of the completed in pre-approxed) 34 Lab report copies to: dep.edd@maine.gov; Kelly Perkins@maine.gov Sample Sample Sample Sample Sample Sample Sample Septage Received in conton firmed if pre-approxed) Septage Receive</td><td>CHAIN OF CUSTODY PAGE 1 OF 1 Maine DEP- LD1911 PFAS Project Samples 7/14/2 320 Forbes Blvd Mansfield MA 02048 Project Information: 0 Felify Name: Hartland WWTF Discharge Schedule: Routine ALPHA Contract Num MEPDES # (Client Project #): ME0101443 Invoice to: Patricia LKO Brott Acordich@main Invoice to: Patricia LKO Brott Acordich@main . of Environmental EGAD Site #: 49019 To be completed bry project Project Manager: Brett Goodrich Phone: 207-380-4261 Discharge Container and Billing Mide ALPHA Contract Num . of Environmental EGAD Site #: 49019 To be completed bry project Midch@maine.gov; Kellx.Perkins@maine.gov; drich@maine.gov Phone: 207-380-4261 Discharge Container and Billing Mide Outfall Container and Billing Mide Alp Flow (MGD) for 24 O. [12. . Of Environmental EGAD Site #: 49019 To be completed bry project Midebare Check the box below for 24 hours of sampling: . Of Environmental EGAD Site #: 49019 To mid-Acound Times: Discharge Container and Billing Mide Outfall 001-A. Check the box below for 24 hours of sampling: . Outfall 001-A Sample Sample Sample Sample Collection Treatment Status Analysis: Maine 28 P Compounds (Isotope Dilution (Isotope Dilution (Isotope Dilution) . O</td><td>CHAIN OF CUSTODY PAGE 1 OF 1 Date Rec'd in Lab: 320 Forbes Bivd Mansiel MA 02048 Project Information: Contract and Billing Hinformation: Contract and Billing Hinformation: Contract and Billing Hinformation: Fellity Name: Hartland WWTF Discharge Schedule: Routine ALPHA Contract Number: 06 MEPDES # (Client Project #): MED101443 Invoice to: Patrical LKorbet@m Brett A Goodrich@maine.gov; Invoice to: Patrical LKorbet@m Brett A Goodrich@maine.gov; Date Recive Alpha Contract Number: 06 20 for Contract and Billing Hinformation: Facility Contact: Chuck Applebee Phone: 207-380-4261 Date Necive@maine.gov; 21p Code: 04901 Facility Contact: Chuck Applebee Phone: 207-380-4261 Date Necive@maine.gov; 21p Code: 04901 Facility Contact: Chuck Applebee Phone: 207-380-4261 Date Necive@maine.gov; 21p Code: 04901 Facility Contact: Margemaine.gov; Kelly Perkins@maine.gov; Check the box below for any every 21p Code: 04901 Facility Contact: Chuck Applebee Phone: 207-380-4261 Teck the box below for any every 21p Code: 04901 Facility Contact: Margemaine.gov; Kelly Perkins@maine.gov; Check the box below for any every 21p Code: 04901 Sample Sample</td><td>CHAIN OF CUSTODY PAGE 1 OF 1 Date Rec'd in Lab: AL 320 Forbes BMd Mained DEP- LD1911 PFAS Project Samples Date Rec'd in Lab: 1/2/2/2/3 1/2 320 Forbes BMd Mained MA Facility Name: Hartland WWTF Discharge Schedule: Routine Contract and Billing Information: ALPHA Contract Number: 06A2022071 ALPHA Contract Number: Facility Name: Hartland WWTF Discharge Schedule: Routine ALPHA Contract Number: 06A2022071 ALPHA Contract Number: 06 Environmental EGAD Site #: 49019 Invoice to: Patricia LKorbet@maine.gov. Odrich Project Manager: Brett Goodrich Facility Contact: Chuck Applebee Phone: 207-380-4261 Daily Flow (MGD) for 24-hour period prior 1/2 of 1/2 MdD 21p Code: 04901 Facility Contact: Chuck Applebee Phone: 207-380-4261 Daily Flow (MGD) for 24-hour period prior 1/2 of 1/2 MdD 21p Code: 04901 Facility Contact: Chuck Applebee Phone: 207-380-4261 Check the box below for any events that or 2/4 hour of ampling: MdT 21p Code: 04901 Facility Contact: Chuck Applebee Phone: 207-380-4261 Check the box below for any events that or 2/4 hour of ampling: Mdt Check the box below for any events that or 2/4 hour of ampling: Mdt Container</td></td<>	CHAIN OF CUSTODY PAGE 1 OF 1 Date Rec'd in 1 320 Forbes Bivd Manine DEP- LD1911 PFAS Project Samples 7/14/ 7/14/ 320 Forbes Bivd Project Information: Contract and Billin Oppose Contract and Billin ALPHA Contract 320 Forbes Bivd Manifed MA Project Information: Contract and Billin Oppose Contract and Billin ALPHA Contract 320 Forbes Bivd MEPDES # (Client Project #): ME0101443 Discharge Schedule: Routine ALPHA Contract 4 Meroles # 49019 Meroles # 49019 Invoice to: Patrice Brett A Goodrich Brett A Goodrich 5 Facility Contact: Chuck Applebee Phone: 207-380-4261 Op /// 20 Op /// 20 21p Code: 04901 Facility Contact: Chuck Applebee Phone: 207-380-4261 Op /// 20 Op /// 20 34 Lab report copies to: dep.edd@maine.gov; Kelly Perkins@maine.gov Watersymathe and and time.gov; Septage Received gmail.com Zhours of sample Date New content of the completed in pre-approxed) 34 Lab report copies to: dep.edd@maine.gov; Kelly Perkins@maine.gov Sample Sample Sample Sample Sample Sample Sample Septage Received in conton firmed if pre-approxed) Septage Receive	CHAIN OF CUSTODY PAGE 1 OF 1 Maine DEP- LD1911 PFAS Project Samples 7/14/2 320 Forbes Blvd Mansfield MA 02048 Project Information: 0 Felify Name: Hartland WWTF Discharge Schedule: Routine ALPHA Contract Num MEPDES # (Client Project #): ME0101443 Invoice to: Patricia LKO Brott Acordich@main Invoice to: Patricia LKO Brott Acordich@main . of Environmental EGAD Site #: 49019 To be completed bry project Project Manager: Brett Goodrich Phone: 207-380-4261 Discharge Container and Billing Mide ALPHA Contract Num . of Environmental EGAD Site #: 49019 To be completed bry project Midch@maine.gov; Kellx.Perkins@maine.gov; drich@maine.gov Phone: 207-380-4261 Discharge Container and Billing Mide Outfall Container and Billing Mide Alp Flow (MGD) for 24 O. [12. . Of Environmental EGAD Site #: 49019 To be completed bry project Midebare Check the box below for 24 hours of sampling: . Of Environmental EGAD Site #: 49019 To mid-Acound Times: Discharge Container and Billing Mide Outfall 001-A. Check the box below for 24 hours of sampling: . Outfall 001-A Sample Sample Sample Sample Collection Treatment Status Analysis: Maine 28 P Compounds (Isotope Dilution (Isotope Dilution (Isotope Dilution) . O	CHAIN OF CUSTODY PAGE 1 OF 1 Date Rec'd in Lab: 320 Forbes Bivd Mansiel MA 02048 Project Information: Contract and Billing Hinformation: Contract and Billing Hinformation: Contract and Billing Hinformation: Fellity Name: Hartland WWTF Discharge Schedule: Routine ALPHA Contract Number: 06 MEPDES # (Client Project #): MED101443 Invoice to: Patrical LKorbet@m Brett A Goodrich@maine.gov; Invoice to: Patrical LKorbet@m Brett A Goodrich@maine.gov; Date Recive Alpha Contract Number: 06 20 for Contract and Billing Hinformation: Facility Contact: Chuck Applebee Phone: 207-380-4261 Date Necive@maine.gov; 21p Code: 04901 Facility Contact: Chuck Applebee Phone: 207-380-4261 Date Necive@maine.gov; 21p Code: 04901 Facility Contact: Chuck Applebee Phone: 207-380-4261 Date Necive@maine.gov; 21p Code: 04901 Facility Contact: Margemaine.gov; Kelly Perkins@maine.gov; Check the box below for any every 21p Code: 04901 Facility Contact: Chuck Applebee Phone: 207-380-4261 Teck the box below for any every 21p Code: 04901 Facility Contact: Margemaine.gov; Kelly Perkins@maine.gov; Check the box below for any every 21p Code: 04901 Sample Sample	CHAIN OF CUSTODY PAGE 1 OF 1 Date Rec'd in Lab: AL 320 Forbes BMd Mained DEP- LD1911 PFAS Project Samples Date Rec'd in Lab: 1/2/2/2/3 1/2 320 Forbes BMd Mained MA Facility Name: Hartland WWTF Discharge Schedule: Routine Contract and Billing Information: ALPHA Contract Number: 06A2022071 ALPHA Contract Number: Facility Name: Hartland WWTF Discharge Schedule: Routine ALPHA Contract Number: 06A2022071 ALPHA Contract Number: 06 Environmental EGAD Site #: 49019 Invoice to: Patricia LKorbet@maine.gov. Odrich Project Manager: Brett Goodrich Facility Contact: Chuck Applebee Phone: 207-380-4261 Daily Flow (MGD) for 24-hour period prior 1/2 of 1/2 MdD 21p Code: 04901 Facility Contact: Chuck Applebee Phone: 207-380-4261 Daily Flow (MGD) for 24-hour period prior 1/2 of 1/2 MdD 21p Code: 04901 Facility Contact: Chuck Applebee Phone: 207-380-4261 Check the box below for any events that or 2/4 hour of ampling: MdT 21p Code: 04901 Facility Contact: Chuck Applebee Phone: 207-380-4261 Check the box below for any events that or 2/4 hour of ampling: Mdt Check the box below for any events that or 2/4 hour of ampling: Mdt Container

- The study has shown to date that at this point in time Method 537 can generally achieve a lower Reporting Limit than Method 1633. As Alpha Analytical has gained more experience running 1633, the RL has come down.
- Along with running paired 537/1633 samples, we are also running TSS samples whenever we run 1633, as literature indicates that higher solids - > 50 mg/l – might be a problem.
- We are also considering running Total Dissolved Solids (TDS) when running 1633 on a sample expected to be high in such pollutants.

Sum of Maine 6

Sum of Maine 6						
	EPA 1633 537.1 RPD					
Average	62.78	59.25	5.78%			
Median	23.22	20.60	11.95%			
High	941.69	903	4.19%			
Low	4.745	4.93	-3.82%			
Average RPD all results	5.497% (EPA	1633 compa	red to 537.1)			

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

Outliers in Data- Kittery WWTF

Kittery WWTF- July 2023						
	EPA 1633	EPA 5371	RPD			
PFDA	0	0.481	-200.00%			
PFHpA	1.58	4.04	-87.54%			
PFHxS	0.747	2.17	-97.57%			
PFNA	0	0.859	-200.00%			
PFOA	1.99	5.62	-95.40%			
PFOS	1.83	4.54	-85.09%			
Sum of 6	6.147	17.7	-96.89%			
Sum of PFOA and PFOS	3.82	10.16	-90.70%			

Kennebunkport WWTF

.

Kennebunkport WWTF- July 2023							
	EPA 1633 EPA 5371 RPD						
PFDA	1.07	0.84	24.08%				
PFHpA	4.95	4.66	6.04%				
PFHxS	5.12	2.93	54.41%				
PFNA	1.98	1.55	24.36%				
PFOA	15.8	13.7	14.24%				
PFOS	27.3	6.1	126.95%				
Sum of 6	56.22	29.8	61.43%				
Sum of PFOA and PFOS	43.1	19.8	74.09%				

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

LAWPCA

Lewiston Auburn Water Pollution Control Authority					
	EPA 1633	RPD			
PFDA	1.17	0.95	20.75%		
PFHpA	3.08	2.67	14.26%		
PFHxS	1.98	1.69	15.80%		
PFNA	1.83	1.39	27.33%		
PFOA	10.1	7.54	29.02%		
PFOS	15.8	9.76	47.26%		
Sum of 6	33.96	24	34.37%		
Sum of PFOA and PFOS	25.9	17.3	39.81%		



Contact:

James R. Crowley State Pretreatment Coordinator james.r.crowley@maine.gov 207-287-8898

