



Massachusetts Department of Environmental Protection - Drinking Water Program **PFAS**
Per- and Polyfluoroalkyl Substances (PFAS) Report

Page 1 of 2

I. PWS INFORMATION: Please refer to your Mass DEP Water Quality Sampling Schedule (WQSS) to help complete this form.

PWS ID #: **2147000** City / Town: **LANCASTER**
 PWS Name: **LANCASTER WATER DEPARTMENT** PWS Class: COM NTNC TNC

Mass DEP LOCATION (LOC) ID#	Mass DEP Location Name	Sample Information	Date Collected	Collected By
RW-01G	WELL #1 RAW	<input type="checkbox"/> (M)ultiple <input checked="" type="checkbox"/> (S)ingle <input checked="" type="checkbox"/> (R)aw <input type="checkbox"/> (F)inished	2/11/20	S. Jones
Routine or Special Sample		If Resubmitted Report, list below:		
Original, Resubmitted or Confirmation Report		(1) Reason for Resubmission	(2) Collection Date of Original Sample	
<input type="checkbox"/> RS <input type="checkbox"/> SS	<input checked="" type="checkbox"/> Original <input type="checkbox"/> Resubmitted <input type="checkbox"/> Confirmation	<input type="checkbox"/> Resample <input type="checkbox"/> Reanalysis <input type="checkbox"/> Report Correction		
SAMPLE NOTES - Such as, if a Manifold/Multiple sample, list the source(s) that were on-line during sample collection.				

II. ANALYTICAL LABORATORY INFORMATION:

Primary Lab Cert. #: **M-MA1118** Primary Lab Name: **NASHOBA ANALYTICAL** Subcontracted? (Y/N) **Y**

Analysis Lab Cert. #: **M-MA030** Analysis Lab Name: **ALPHA ANALYTICAL MANSFIELD**

If Analysis Lab is not certified by MassDEP or U.S. EPA, list certification authority:

Lab Method	Date Extracted	Date Analyzed	Lab Sample ID#	LAB SAMPLE NOTES - Include information as to whether sample was diluted or additional contaminants detected.
EPA 537	2/13/20	2/14/20	211759	

CAS#	REGULATED AND UNREGULATED PFAS CONTAMINANTS	Report One of the Following			ORSG ¹ µg/L	MRL ² µg/L
		Results ³ µg/L	<MRL (Check ✓)	<1/3MRL (Check ✓)		
1783-23-1	Perfluorooctane Sulfonic Acid (PFOS)	ND	<input type="checkbox"/>	<input type="checkbox"/>	0.070	0.00193
335-67-1	Perfluorooctanoic Acid (PFOA)	ND	<input type="checkbox"/>	<input type="checkbox"/>	0.070	0.00193
355-46-4	Perfluorohexane Sulfonic Acid (PFHxS)	ND	<input type="checkbox"/>	<input type="checkbox"/>	0.070	0.00193
375-95-1	Perfluorononanoic Acid (PFNA)	ND	<input type="checkbox"/>	<input type="checkbox"/>	0.070	0.00193
375-85-9	Perfluorohexanoic Acid (PFHpA)	ND	<input type="checkbox"/>	<input type="checkbox"/>	0.070	0.00193
375-73-5	Perfluorobutane sulfonic acid (PFBS)	ND	<input type="checkbox"/>	<input type="checkbox"/>	-	0.00193
335-76-2	Perfluorodecanoic acid (PFDA)	ND	<input type="checkbox"/>	<input type="checkbox"/>	-	0.00193
307-55-1	Perfluorododecanoic acid (PFDoA)	ND	<input type="checkbox"/>	<input type="checkbox"/>	-	0.00193
307-24-4	Perfluorohexanoic acid (PFHxA)	ND	<input type="checkbox"/>	<input type="checkbox"/>	-	0.00193
376-06-7	Perfluorotetradecanoic acid (PFTA)	ND	<input type="checkbox"/>	<input type="checkbox"/>	-	0.00193
72629-94-8	Perfluorotridecanoic acid (PFTDA)	ND	<input type="checkbox"/>	<input type="checkbox"/>	-	0.00193
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND	<input type="checkbox"/>	<input type="checkbox"/>	-	0.00193
2891-50-6	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	<input type="checkbox"/>	<input type="checkbox"/>	-	0.00193
2355-31-9	N-methyl perfluorooctanesulfonamidoacetic acid (NMtFOSAA)	ND	<input type="checkbox"/>	<input type="checkbox"/>	-	0.00193
783051-92-9	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)		<input type="checkbox"/>	<input type="checkbox"/>	-	
756426-58-1	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)		<input type="checkbox"/>	<input type="checkbox"/>	-	
819005-14-4	4,8-dioxo-3H-perfluorononanoic acid (ADONA)		<input type="checkbox"/>	<input type="checkbox"/>	-	
13252-13-6	Hexafluoropropylene oxide dimer acid (HFPO-DA)		<input type="checkbox"/>	<input type="checkbox"/>	-	

¹ The MassDEP ORSG is 0.070 µg/L for PFOA, PFOS, PFHxS, PFNA, and PFHpA, individually or added together.

² The minimum reporting level (MRL) is the lowest concentration of the substance tested that can be reported reliably under normal laboratory conditions.

³ A field reagent blank (FRB) must be analyzed and reported on a separate PFAS form if any PFAS are detected above the MRL.



ANALYTICAL REPORT

Lab Number:	L2006297
Client:	Nashoba Analytical, LLC 31A Willow Rd Ayer, MA 01432
ATTN:	Maria Braun
Phone:	(978) 391-4428
Project Name:	Not Specified
Project Number:	Not Specified
Report Date:	02/19/20

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL 106), PA (68-02089), RI (LAC00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Serial_No:02192011:45

Project Name: Not Specified
Project Number: Not Specified

Lab Number: L2006297
Report Date: 02/19/20

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2006297-01	211759-WELL 1 LANCASTER, MA	DW	Not Specified	02/11/20 07:57	02/12/20
L2006297-02	FIELD BLANK	DW	Not Specified	02/11/20 00:00	02/12/20



Project Name: Not Specified
Project Number: Not Specified

Lab Number: L2006297
Report Date: 02/19/20

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

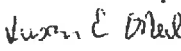
When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Susan O'Neil

Title: Technical Director/Representative

Date: 02/19/20



ORGANICS



SEMIVOLATILES



Serial_No:02192011:45

Project Name: Not Specified
Project Number: Not Specified

Lab Number: L2006297
Report Date: 02/19/20

SAMPLE RESULTS

Lab ID: L2006297-01
Client ID: 211759-WELL 1 LANCASTER, MA
Sample Location: Not Specified

Date Collected: 02/11/20 07:57
Date Received: 02/12/20
Field Prep: Not Specified

Sample Depth:
Matrix: Dw
Analytical Method: 122.537
Analytical Date: 02/14/20 08:18
Analyst: RS

Extraction Method: EPA 537
Extraction Date: 02/13/20 09:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.93	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.93	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.93	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.93	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.93	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.93	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.93	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.93	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.93	--	1
Perfluorodecanoic Acid (PFUnA)	ND		ng/l	1.93	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEFOSAA)	ND		ng/l	1.93	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.93	--	1
Perfluorotridecanoic Acid (PFTriDA)	ND		ng/l	1.93	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.93	--	1
PFOA/PFOS, Total	ND		ng/l	1.93	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	108		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	100		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEIFOSAA)	99		70-130



Serial_No:02192011:45

Project Name: Not Specified
 Project Number: Not Specified

Lab Number: L2006297
 Report Date: 02/19/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 122.537
 Analytical Date: 02/14/20 08:01
 Analyst: PE

Extraction Method: EPA 537
 Extraction Date: 02/13/20 09:40

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 537 - Mansfield Lab for sample(s): 01 Batch: WG1340277-1					
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	20.0	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	20.0	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	20.0	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	20.0	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	20.0	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	20.0	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	20.0	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	20.0	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	20.0	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	20.0	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	20.0	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	20.0	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	20.0	--
Perfluorotetradecanoic Acid (PFTEA)	ND		ng/l	20.0	--
PFOA/PFOS, Total	ND		ng/l	20.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	108		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	106		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	85		70-130



Lab Control Sample Analysis
Batch Quality Control

Project Name: Not Specified
Project Number: Not Specified

Lab Number: L2006297
Report Date: 02/19/20

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Perfluorinated Alkyl Acids by EPA 537 - Mansfield Lab Associated sample(s): 01 Batch: WG1340277-2 WG1340277-3								
Perfluorobutanesulfonic Acid (PFBS)	106		109		70-130	3		30
Perfluorohexanoic Acid (PFHxA)	106		109		70-130	3		30
Perfluoroheptanoic Acid (PFHpA)	107		111		70-130	4		30
Perfluorohexanesulfonic Acid (PFHxS)	109		111		70-130	2		30
Perfluorooctanoic Acid (PFOA)	112		112		70-130	0		30
Perfluorononanoic Acid (PFNA)	113		112		70-130	1		30
Perfluorooctanesulfonic Acid (PFOS)	105		108		70-130	3		30
Perfluorodecanoic Acid (PFDA)	111		112		70-130	1		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	105		104		70-130	2		30
Perfluoroundecanoic Acid (PFUnA)	112		115		70-130	3		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEFOSAA)	112		112		70-130	0		30
Perfluorododecanoic Acid (PFDA)	116		115		70-130	1		30
Perfluorotridecanoic Acid (PFTrDA)	110		116		70-130	5		30
Perfluorotetradecanoic Acid (PFTA)	117		115		70-130	2		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	107		108		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	108		107		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEFOSAA)	105		99		70-130



Matrix Spike Analysis
Batch Quality Control

Project Name: Not Specified
Project Number: Not Specified

Lab Number: L2006297
Report Date: 02/19/20

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1340277-4 QC Sample: L2006297-01 Client ID: 211759-WELL 1 LANCASTER, MA												
Perfluorobutanesulfonic Acid (PFBS)	ND	260	283	106	-	-	-	-	70-130	-	-	30
Perfluorohexanoic Acid (PFHxA)	ND	294	322	106	-	-	-	-	70-130	-	-	30
Perfluoroheptanoic Acid (PFHpA)	ND	294	323	110	-	-	-	-	70-130	-	-	30
Perfluorohexanesulfonic Acid (PFHxS)	ND	268	293	109	-	-	-	-	70-130	-	-	30
Perfluorooctanoic Acid (PFOA)	ND	284	336	114	-	-	-	-	70-130	-	-	30
Perfluorononanoic Acid (PFNA)	ND	294	321	109	-	-	-	-	70-130	-	-	30
Perfluorooctanesulfonic Acid (PFOS)	ND	272	287	105	-	-	-	-	70-130	-	-	30
Perfluorodecanoic Acid (PFDA)	ND	294	326	111	-	-	-	-	70-130	-	-	30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	294	312	106	-	-	-	-	70-130	-	-	30
Perfluoroundecanoic Acid (PFUnA)	ND	294	325	111	-	-	-	-	70-130	-	-	30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEFOSAA)	ND	294	321	109	-	-	-	-	70-130	-	-	30
Perfluorododecanoic Acid (PFDoA)	ND	294	342	116	-	-	-	-	70-130	-	-	30
Perfluorotridecanoic Acid (PFTriDA)	ND	294	322	109	-	-	-	-	70-130	-	-	30
Perfluorotetradecanoic Acid (PFTA)	ND	294	318	106	-	-	-	-	70-130	-	-	30

Surrogate	MS		MSD		Acceptance Criteria
	% Recovery	Qualifier	% Recovery	Qualifier	
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEFOSAA)	100				70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	104				70-130
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	108				70-130



Project Name: Not Specified
Project Number: Not Specified

Serial_No: 02192011:45
Lab Number: L2006297
Report Date: 02/19/20

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information
Cooler **Custody Seal**
A Absent

Container Information		Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2006297-01A	2 Plastic Trizma/1 Plastic/1 H2O+Trizma	A	NA		4.4	Y	Absent		A2-537(14)
L2006297-01B	2 Plastic Trizma/1 Plastic/1 H2O+Trizma	A	NA		4.4	Y	Absent		A2-537(14)
L2006297-02A	2 Plastic Trizma/1 Plastic/1 H2O+Trizma	A	NA		4.4	Y	Absent		HOLD-537(14)

*Values in parentheses indicate holding time in days



Project Name: Not Specified
Project Number:

Serial_No:02192011:45
Lab Number: L2006297
Report Date: 02/19/20

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	18517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorododecanoic Acid	PFTDA	72629-94-8
Perfluorodecanoic Acid	PFDA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-40-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10.2FTS	120228-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8.2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6.2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4.2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEIFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-6
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEIFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEIFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	918005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1



Project Name: Not Specified
Project Number: Not Specified

Lab Number: L2006297
Report Date: 02/19/20

GLOSSARY

Acronyms

DL	- Detection Limit. This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCS/D	- Laboratory Control Sample Duplicate. Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate. Refer to MS.
NA	- Not Applicable
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine Diphenylamine
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: Data Usability Report



Project Name: Not Specified
Project Number: Not Specified

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1 . The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method

Terms

Analytical Method Both the document from which the method originates and the analytical reference method (Example, EPA 8260B is shown as 1,8260B) The codes for the reference method documents are provided in the References section of the Addendum
Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects initial pH

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'hold' Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)h)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (S)' result is defined as the summation of results for PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A . Spectra identified as "Aldol Condensates" are byproducts of the extraction concentration procedures when acetone is introduced in the process
- B . The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit as the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone)
- C . Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D . Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte
- E . Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument
- G . The concentration may be biased high due to matrix interferences (i.e., co-elution) with non-target compound(s). The result should be considered estimated
- H . The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection
- I . The lower value for the two columns has been reported due to obvious interference
- J . Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M . Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte
- ND . Not detected at the reporting limit (RL) for the sample.
- NJ . Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P . The RPD between the results for the two columns exceeds the method specified criteria
- Q . The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedances are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less

Report Format Data Usability Report



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Data Qualifiers

- than 5x the RL. (Metals only.)
- R - Analytical results are from sample re-analysis
 - RE - Analytical results are from sample re-extraction
 - S - Analytical results are from modified screening analysis.

Report Format Data Usability Report



Project Name: Not Specified
Project Number: Not Specified

Lab Number: L2006297
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REFERENCES

- 122 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 824/824.1: m/p-xylene, o-xylene
 EPA 8260C: NPW 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene, Azobenzene, SCM Iodomethane (methyl iodide) 1,2,4,5-Tetramethylbenzene 4-Ethyltoluene
 EPA 8270D: NPW Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM Dimethylnaphthalene,1,4-Diphenylhydrazine
 SM4500 NPW Amenable Cyanide; SCM Total Phosphorus, TKN, NO₂, NO₃

Mansfield Facility

SM 2540D: TSS
 EPA 8082A: NPW PCB 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187
 EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiofene, 1-Methylnaphthalene
 EPA TO-12 Non-methane organics
 EPA 3C Fixed gases
 Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0 Chloride, Nitrate-N, Fluoride, Sulfate; EPA 353.2 Nitrate-N, Nitrite N; SM4500NO3-F Nitrate-N, Nitrite N; SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B
 EPA 332 Perchlorate; EPA 624.2 THMs and VOCs; EPA 604.1: EDB, DBCP
 Microbiology SM9215B; SM9223-P/A, SM9223B-Coliart-QT, SM9222D

Non-Potable Water

SM4500H,B, EPA 120.1, SM2610B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, EPA 350.1 Ammonia-N, LACHAT 10-107-06-1-B Ammonia-N, EPA 351.1, SM4500NO3-F, EPA 353.2 Nitrate-N, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM6220D, EPA 410.4, SM6210B, SM6310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2640D, EPA 300: Chloride, Sulfate, Nitrate.
 EPA 624.1 Volatile Halocarbons & Aromatics
 EPA 608.3 Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
 EPA 825.1 SVOC (Acid/Base/Neutral Extractables) EPA 600/4-81-045 PCB Oil
 Microbiology SM9223B-Coliart-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn EPA 200.8: Al, Sb, As, Be, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, Tl, Zn EPA 245.1 Hg
 EPA 522.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Mo, Ni, K, Se, Ag, Na, Sr, Tl, Ti, V, Zn
 EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, Tl, Zn
 EPA 245.1 Hg
 SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

ALPHA

Date Rec'd in Lab 1/17/10

ALPHA Job #. L2006297

Client Information Client: Nashua Analytical LLC Address: 51A Willow Brook AYER, NH 03432 Phone: 978 571 4420 Fax: _____ Email: _____ Website: _____ Other Project Specific Requirements/Comments/Detection Limits: Please use field blank only - no.1 detects		Project Information Project Name: _____ Project Location: _____ Project #.: _____ Project Manager: _____ ALPHA Quote #: _____ Turn-Around Time: _____ Sample Date: _____ Time: _____	Report Information - Data Deliverables <input type="checkbox"/> FAX <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> ADT <input checked="" type="checkbox"/> ADT Generation	Billing Information <input type="checkbox"/> Same as Client info. <input type="checkbox"/> PO # _____
Regulatory Requirements/Report Limits State/Fed Program: _____ Criteria: _____		Turn-Around Time _____		

ANALYSIS EPA 537

SAMPLE HANDLING

- Filtered
- Store
- Not needed
- Lab to do Preservation
- Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collector	Date	Time	Sample Matrix	Sample Volume	Sample Specific Comments
L2006297-01	211759 - Well 1 Lanaster, MA	1/17/10 F.S.J. PW	1/17/10	7:59	PW	5L	X
-02	Field Blank						

Container Type: P
 Preservative: 0

Retrieved By	Date/Time	Date/Time
<i>[Signature]</i>	1/17/10 12:10	1/17/10 12:10
<i>[Signature]</i>	1/17/10 12:10	1/17/10 12:10
<i>[Signature]</i>	1/17/10 12:10	1/17/10 12:10

Please print clearly legibly and completely. Samples can not be logged in and timestamp time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

