



**LELAP CERTIFICATE NUMBER: 01955**  
**DOD-ELAP ACCREDITATION NUMBER: 74960**

# **ANALYTICAL RESULTS**

**PERFORMED BY**

**Pace Analytical Gulf Coast**  
**7979 Innovation Park Dr.**  
**Baton Rouge, LA 70820**  
**(225) 769-4900**

**Report Date 04/28/2020**

**Report # 220033111**



**Project PFAS/PFOA-CF302**

<b><i>Deliver To</i></b>	<b><i>Additional Recipients</i></b>
Stephanie Monrad Firefreeze Worldwide Inc 272 Route 46 East Rockaway, NJ 07866	NONE



**Revision 1**



Report#: 220033111

Project ID: PFAS/PFOA-CF302

Report Date: 04/28/2020

## Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with Pace Gulf Coast's Standard Operating Procedures.

### Common Abbreviations that may be Utilized in this Report

<b>ND</b>	Indicates the result was Not Detected at the specified reporting limit
<b>NO</b>	Indicates the sample did not ignite when preliminary test performed for EPA Method 1030
<b>DO</b>	Indicates the result was Diluted Out
<b>MI</b>	Indicates the result was subject to Matrix Interference
<b>TNTC</b>	Indicates the result was Too Numerous To Count
<b>SUBC</b>	Indicates the analysis was Sub-Contracted
<b>FLD</b>	Indicates the analysis was performed in the Field
<b>DL</b>	Detection Limit
<b>LOD</b>	Limit of Detection
<b>LOQ</b>	Limit of Quantitation
<b>RE</b>	Re-analysis
<b>CF</b>	HPLC or GC Confirmation
<b>00:01</b>	Reported as a time equivalent to 12:00 AM

### Reporting Flags that may be Utilized in this Report

<b>J or I</b>	Indicates the result is between the MDL and LOQ
<b>J</b>	DOD flag on analyte in the parent sample for MS/MSD outside acceptance criteria
<b>U</b>	Indicates the compound was analyzed for but not detected
<b>B or V</b>	Indicates the analyte was detected in the associated Method Blank
<b>Q</b>	Indicates a non-compliant QC Result (See Q Flag Application Report)
<b>*</b>	Indicates a non-compliant or not applicable QC recovery or RPD – see narrative
<b>E</b>	Organics - The result is estimated because it exceeded the instrument calibration range
<b>E</b>	Metals - % difference for the serial dilution is > 10%
<b>L</b>	Reporting Limits adjusted to meet risk-based limit.
<b>P</b>	RPD between primary and confirmation result is greater than 40
<b>DL</b>	Diluted analysis – when appended to Client Sample ID

Sample receipt at Pace Gulf Coast is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of Pace Gulf Coast. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with The NELAC Institute (TNI) Standard 2009 and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.

\_\_\_\_\_  
Authorized Signature  
Pace Gulf Coast Report 220033111

## Revision 1

## Certifications

Certification	Certification Number
DOD ELAP	74960
Alabama	01955
Arkansas	88-0655
Colorado	01955
Delaware	01955
Florida	E87854
Georgia	01955
Hawaii	01955
Idaho	01955
Illinois	200048
Indiana	01955
Kansas	E-10354
Kentucky	95
Louisiana	01955
Maryland	01955
Massachusetts	01955
Michigan	01955
Mississippi	01955
Missouri	01955
Montana	N/A
Nebraska	01955
New Mexico	01955
North Carolina	618
North Dakota	R-195
Oklahoma	9403
South Carolina	73006001
South Dakota	01955
Tennessee	01955
Texas	T104704178
Vermont	01955
Virginia	460215
Washington	C929
USDA Soil Permit	P330-16-00234

## Revision 1



# Case Narrative

Client: Firefreeze Worldwide Inc      Report: 220033111

Pace Analytical Gulf Coast received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

This report is revised 04/28/20 to not report detections in red. The definition of MS is added to the miscellaneous section of this narrative.

## COC ANOMALIES

Samples should be analyzed for EPA 537 (PFOA/PFOS). (Amanda Cox 04/01/2020 08:27)

## SEMI-VOLATILES MASS SPECTROMETRY

All samples were analyzed as serial dilutions due to foaming. This is reflected in elevated detection limits.

In the EPA 537 Modified analysis for analytical batch 681102, the recovery for PFOS is above the upper control limit in the closing CCV. This analyte was not detected in associated samples.

## MISCELLANEOUS

Matrix Spike (MS) - Matrix spikes are aliquots of environmental samples to which known concentrations of target analytes have been added before sample preparation or analytical procedures have been implemented.

### PFAS Abbreviations

- 6:2 FTS - 6:2 Fluorotelomer sulfonate
- 8:2 FTS - 8:2 Fluorotelomer sulfonate
- FOSA - Perfluorooctane Sulfonamide
- PFBA - Perfluorobutanoic acid
- PFBS - Perfluorobutanesulfonic acid
- PFDA - Perfluorodecanoic acid
- PFDS - Perfluorodecane Sulfonate
- PFDoA - Perfluorododecanoic acid
- PFHpA - Perfluoroheptanoic acid
- PFHpS - Perfluoro-1-heptanesulfonate
- PFHxA - Perfluorohexanoic acid
- PFHxS - Perfluorohexanesulfonic acid
- PFNA - Perfluorononanoic acid
- PFOA - Perfluorooctanoic acid
- PFOS - Perfluorooctanesulfonic acid
- PFPeA - Perfluoropentanoic acid
- PFTeDA - Perfluorotetradecanoic acid
- PFTrDA - Perfluorotridecanoic acid
- PFUdA - Perfluoroundecanoic acid



Report#: 220033111

Project ID: PFAS/PFOA-CF302

Report Date: 04/28/2020

## Sample Summary

LAB ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
22003311101	CF302	Water	03/26/2020 10:00	03/27/2020 09:22
22003311102	CF302 DUP	Water	03/26/2020 10:00	03/27/2020 09:22
22003311103	CF302 MS	Water	03/26/2020 10:00	03/27/2020 09:22
22003311104	CF302	Water	03/26/2020 10:00	03/27/2020 09:22
22003311105	CF302 DUP	Water	03/26/2020 10:00	03/27/2020 09:22
22003311106	CF302 MS	Water	03/26/2020 10:00	03/27/2020 09:22
22003311107	CF302	Water	03/26/2020 10:00	03/27/2020 09:22
22003311108	CF302 DUP	Water	03/26/2020 10:00	03/27/2020 09:22
22003311109	CF302 MS	Water	03/26/2020 10:00	03/27/2020 09:22
22003311110	CF302	Water	03/26/2020 10:00	03/27/2020 09:22
22003311111	CF302 DUP	Water	03/26/2020 10:00	03/27/2020 09:22
22003311112	CF302 MS	Water	03/26/2020 10:00	03/27/2020 09:22

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**Report#:** 220033111

**Project ID:** PFAS/PFOA-CF302

**Report Date:** 04/28/2020

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## Summary of Compounds Detected

No analytes were detected for analyses performed by Pace Gulf Coast.

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Report#: 220033111

Project ID: PFAS/PFOA-CF302

Report Date: 04/28/2020

# Sample Results

<b>CF302</b>	<b>Collect Date</b>	03/26/2020 10:00	<b>LAB ID</b>	22003311101
	<b>Receive Date</b>	03/27/2020 09:22	<b>Matrix</b>	Water

## EPA 537 Modified

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
03/31/2020 15:30	680807	EPA 537 Modified	1	04/04/2020 15:33	BMH	681102

CAS#	Parameter	Result	LOQ	Units
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND	6250	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	ND	6250	ng/L

  

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
335-67-1-EIS	M8PFOA	12500	11500	ng/L	92	50 - 150
1763-23-1-EIS	M8PFOS	12500	8870	ng/L	71	50 - 150

<b>CF302 DUP</b>	<b>Collect Date</b>	03/26/2020 10:00	<b>LAB ID</b>	22003311102
	<b>Receive Date</b>	03/27/2020 09:22	<b>Matrix</b>	Water

## EPA 537 Modified

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
03/31/2020 15:30	680807	EPA 537 Modified	1	04/04/2020 15:45	BMH	681102

CAS#	Parameter	Result	LOQ	Units
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND	6250	ng/L
335-67-1	Perfluorooctanoic acid (PFOA)	ND	6250	ng/L

  

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
335-67-1-EIS	M8PFOA	12500	12400	ng/L	99	50 - 150
1763-23-1-EIS	M8PFOS	12500	9160	ng/L	73	50 - 150

<b>CF302 MS</b>	<b>Collect Date</b>	03/26/2020 10:00	<b>LAB ID</b>	22003311103
	<b>Receive Date</b>	03/27/2020 09:22	<b>Matrix</b>	Water

## EPA 537 Modified

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
03/31/2020 15:30	680807	EPA 537 Modified	1	04/04/2020 15:56	BMH	681102

CAS#	Parameter	Result	LOQ	Units
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	47900	6250	ng/L

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Project ID: PFAS/PFOA-CF302

Report Date: 04/28/2020

# Sample Results

<b>CF302 MS</b>	<b>Collect Date</b>	03/26/2020 10:00	<b>LAB ID</b>	22003311103
	<b>Receive Date</b>	03/27/2020 09:22	<b>Matrix</b>	Water

## EPA 537 Modified (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
03/31/2020 15:30	680807	EPA 537 Modified (Continued)	1	04/04/2020 15:56	BMH	681102

CAS#	Parameter	Result	LOQ	Units		
335-67-1	Perfluorooctanoic acid (PFOA)	46500	6250	ng/L		
CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
335-67-1-EIS	M8PFOA	12500	12000	ng/L	96	50 - 150
1763-23-1-EIS	M8PFOS	12500	9720	ng/L	78	50 - 150

<b>CF302</b>	<b>Collect Date</b>	03/26/2020 10:00	<b>LAB ID</b>	22003311104
	<b>Receive Date</b>	03/27/2020 09:22	<b>Matrix</b>	Water

## EPA 537 Modified

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
03/31/2020 15:30	680807	EPA 537 Modified	1	04/04/2020 16:18	BMH	681102

CAS#	Parameter	Result	LOQ	Units		
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND	6250	ng/L		
335-67-1	Perfluorooctanoic acid (PFOA)	ND	6250	ng/L		
CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
335-67-1-EIS	M8PFOA	12500	11500	ng/L	92	50 - 150
1763-23-1-EIS	M8PFOS	12500	9350	ng/L	75	50 - 150

<b>CF302 DUP</b>	<b>Collect Date</b>	03/26/2020 10:00	<b>LAB ID</b>	22003311105
	<b>Receive Date</b>	03/27/2020 09:22	<b>Matrix</b>	Water

## EPA 537 Modified

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
03/31/2020 15:30	680807	EPA 537 Modified	1	04/04/2020 16:29	BMH	681102

CAS#	Parameter	Result	LOQ	Units
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND	6250	ng/L

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Project ID: PFAS/PFOA-CF302

Report Date: 04/28/2020

### Sample Results

<b>CF302 DUP</b>	<b>Collect Date</b>	03/26/2020 10:00	<b>LAB ID</b>	22003311105
	<b>Receive Date</b>	03/27/2020 09:22	<b>Matrix</b>	Water

#### EPA 537 Modified (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
03/31/2020 15:30	680807	EPA 537 Modified (Continued)	1	04/04/2020 16:29	BMH	681102

CAS#	Parameter	Result	LOQ	Units		
335-67-1	Perfluorooctanoic acid (PFOA)	ND	6250	ng/L		
CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
335-67-1-EIS	M8PFOA	12500	11700	ng/L	94	50 - 150
1763-23-1-EIS	M8PFOS	12500	9830	ng/L	79	50 - 150

<b>CF302 MS</b>	<b>Collect Date</b>	03/26/2020 10:00	<b>LAB ID</b>	22003311106
	<b>Receive Date</b>	03/27/2020 09:22	<b>Matrix</b>	Water

#### EPA 537 Modified

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
03/31/2020 15:30	680807	EPA 537 Modified	1	04/04/2020 16:41	BMH	681102

CAS#	Parameter	Result	LOQ	Units		
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	45200	6250	ng/L		
335-67-1	Perfluorooctanoic acid (PFOA)	43000	6250	ng/L		
CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
335-67-1-EIS	M8PFOA	12500	12000	ng/L	96	50 - 150
1763-23-1-EIS	M8PFOS	12500	9820	ng/L	79	50 - 150

<b>CF302</b>	<b>Collect Date</b>	03/26/2020 10:00	<b>LAB ID</b>	22003311107
	<b>Receive Date</b>	03/27/2020 09:22	<b>Matrix</b>	Water

#### EPA 537 Modified

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
03/31/2020 15:30	680807	EPA 537 Modified	1	04/04/2020 17:03	BMH	681102

CAS#	Parameter	Result	LOQ	Units
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND	6250	ng/L

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Project ID: PFAS/PFOA-CF302

Report Date: 04/28/2020

# Sample Results

<b>CF302</b>	<b>Collect Date</b>	03/26/2020 10:00	<b>LAB ID</b>	22003311107
	<b>Receive Date</b>	03/27/2020 09:22	<b>Matrix</b>	Water

## EPA 537 Modified (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
03/31/2020 15:30	680807	EPA 537 Modified (Continued)	1	04/04/2020 17:03	BMH	681102

CAS#	Parameter	Result	LOQ	Units		
335-67-1	Perfluorooctanoic acid (PFOA)	ND	6250	ng/L		
CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
335-67-1-EIS	M8PFOA	12500	12100	ng/L	97	50 - 150
1763-23-1-EIS	M8PFOS	12500	10200	ng/L	81	50 - 150

<b>CF302 DUP</b>	<b>Collect Date</b>	03/26/2020 10:00	<b>LAB ID</b>	22003311108
	<b>Receive Date</b>	03/27/2020 09:22	<b>Matrix</b>	Water

## EPA 537 Modified

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
03/31/2020 15:30	680807	EPA 537 Modified	1	04/04/2020 17:14	BMH	681102

CAS#	Parameter	Result	LOQ	Units		
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND	6250	ng/L		
335-67-1	Perfluorooctanoic acid (PFOA)	ND	6250	ng/L		
CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
335-67-1-EIS	M8PFOA	12500	12300	ng/L	99	50 - 150
1763-23-1-EIS	M8PFOS	12500	10300	ng/L	82	50 - 150

<b>CF302 MS</b>	<b>Collect Date</b>	03/26/2020 10:00	<b>LAB ID</b>	22003311109
	<b>Receive Date</b>	03/27/2020 09:22	<b>Matrix</b>	Water

## EPA 537 Modified

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
03/31/2020 15:30	680807	EPA 537 Modified	1	04/04/2020 17:26	BMH	681102

CAS#	Parameter	Result	LOQ	Units
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	50100	6250	ng/L

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Report Date: 04/28/2020

### Sample Results

<b>CF302 MS</b>	<b>Collect Date</b>	03/26/2020 10:00	<b>LAB ID</b>	22003311109
	<b>Receive Date</b>	03/27/2020 09:22	<b>Matrix</b>	Water

#### EPA 537 Modified (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
03/31/2020 15:30	680807	EPA 537 Modified (Continued)	1	04/04/2020 17:26	BMH	681102

CAS#	Parameter	Result	LOQ	Units		
335-67-1	Perfluorooctanoic acid (PFOA)	46300	6250	ng/L		
CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
335-67-1-EIS	M8PFOA	12500	12100	ng/L	97	50 - 150
1763-23-1-EIS	M8PFOS	12500	9390	ng/L	75	50 - 150

<b>CF302</b>	<b>Collect Date</b>	03/26/2020 10:00	<b>LAB ID</b>	22003311110
	<b>Receive Date</b>	03/27/2020 09:22	<b>Matrix</b>	Water

#### EPA 537 Modified

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
03/31/2020 15:30	680807	EPA 537 Modified	1	04/04/2020 17:48	BMH	681102

CAS#	Parameter	Result	LOQ	Units		
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND	6250	ng/L		
335-67-1	Perfluorooctanoic acid (PFOA)	ND	6250	ng/L		
CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
335-67-1-EIS	M8PFOA	12500	11400	ng/L	91	50 - 150
1763-23-1-EIS	M8PFOS	12500	9820	ng/L	79	50 - 150

<b>CF302 DUP</b>	<b>Collect Date</b>	03/26/2020 10:00	<b>LAB ID</b>	22003311111
	<b>Receive Date</b>	03/27/2020 09:22	<b>Matrix</b>	Water

#### EPA 537 Modified

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
03/31/2020 15:30	680807	EPA 537 Modified	1	04/04/2020 17:59	BMH	681102

CAS#	Parameter	Result	LOQ	Units
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND	6250	ng/L

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Report#: 220033111

Project ID: PFAS/PFOA-CF302

Report Date: 04/28/2020

# Sample Results

<b>CF302 DUP</b>	<b>Collect Date</b>	03/26/2020 10:00	<b>LAB ID</b>	22003311111
	<b>Receive Date</b>	03/27/2020 09:22	<b>Matrix</b>	Water

## EPA 537 Modified (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
03/31/2020 15:30	680807	EPA 537 Modified (Continued)	1	04/04/2020 17:59	BMH	681102

CAS#	Parameter	Result	LOQ	Units		
335-67-1	Perfluorooctanoic acid (PFOA)	ND	6250	ng/L		
CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
335-67-1-EIS	M8PFOA	12500	11700	ng/L	94	50 - 150
1763-23-1-EIS	M8PFOS	12500	10000	ng/L	80	50 - 150

<b>CF302 MS</b>	<b>Collect Date</b>	03/26/2020 10:00	<b>LAB ID</b>	22003311112
	<b>Receive Date</b>	03/27/2020 09:22	<b>Matrix</b>	Water

## EPA 537 Modified

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
03/31/2020 15:30	680807	EPA 537 Modified	1	04/04/2020 18:10	BMH	681102

CAS#	Parameter	Result	LOQ	Units		
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	45300	6250	ng/L		
335-67-1	Perfluorooctanoic acid (PFOA)	43700	6250	ng/L		
CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
335-67-1-EIS	M8PFOA	12500	11900	ng/L	96	50 - 150
1763-23-1-EIS	M8PFOS	12500	9960	ng/L	80	50 - 150

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Report#: 220033111

Project ID: PFAS/PFOA-CF302

Report Date: 04/28/2020

# LC-MS/MS PFAS QC Summary

<b>Analytical Batch</b> 680998	Client ID MB680807	LAB ID 2026143	LCS680807 2026144	LCSD680807 2026145								
<b>Prep Batch</b> 680807	Sample Type MB	Prep Date 03/31/2020 15:30	LCS 03/31/2020 15:30	LCS 03/31/2020 15:30								
<b>Prep Method</b> EPA 537 Modified	Analysis Date 04/02/2020 07:18	Matrix Water	04/02/2020 07:30	04/02/2020 07:41								
<b>EPA 537 Modified</b>		Units Result	ng/L LOQ	Spike Added	Result	%R	Control Limits	%R	RPD	RPD Limit		
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	ND	1250	9260	9840	106	70 - 130	9260	10800	117	10	30
Perfluorooctanoic acid (PFOA)	335-67-1	ND	1250	10000	9150	92	70 - 130	10000	9160	92	0	30
<b>Surrogate</b>												
M8PFOA	335-67-1-EIS	12700	102	12500	12800	102	50 - 150	12500	12500	100	NA	NA
M8PFOS	1763-23-1-EIS	9790	78	12500	9940	80	50 - 150	12500	8980	72	NA	NA

<b>Analytical Batch</b> 681102	Client ID CF302	LAB ID 22003311101	CF302 DUP 22003311102	CF302 MS 22003311103							
<b>Prep Batch</b> 680807	Sample Type SAMPLE	Prep Date 03/31/2020 15:30	DUP 03/31/2020 15:30	MS 03/31/2020 15:30							
<b>Prep Method</b> EPA 537 Modified	Analysis Date 04/04/2020 15:33	Matrix Water	04/04/2020 15:45	04/04/2020 15:56							
<b>EPA 537 Modified</b>		Units Result	ng/L LOQ	Result	RPD	RPD Limit	Spike Added	Result	%R	Control Limits	%R
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.00	6250	0.00	0	30	46300	47900	104	70 - 130	
Perfluorooctanoic acid (PFOA)	335-67-1	0.00	6250	0.00	0	30	50000	46500	93	70 - 130	
<b>Surrogate</b>											
M8PFOA	335-67-1-EIS	11500	92	12400	NA	NA	12500	12000	96	50 - 150	
M8PFOS	1763-23-1-EIS	8870	71	9160	NA	NA	12500	9720	78	50 - 150	

<b>Analytical Batch</b> 681102	Client ID CF302	LAB ID 22003311104	CF302 DUP 22003311105	CF302 MS 22003311106							
<b>Prep Batch</b> 680807	Sample Type SAMPLE	Prep Date 03/31/2020 15:30	DUP 03/31/2020 15:30	MS 03/31/2020 15:30							
<b>Prep Method</b> EPA 537 Modified	Analysis Date 04/04/2020 16:18	Matrix Water	04/04/2020 16:29	04/04/2020 16:41							
<b>EPA 537 Modified</b>		Units Result	ng/L LOQ	Result	RPD	RPD Limit	Spike Added	Result	%R	Control Limits	%R
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.00	6250	0.00	0	30	46300	45200	98	70 - 130	
Perfluorooctanoic acid (PFOA)	335-67-1	0.00	6250	0.00	0	30	50000	43000	86	70 - 130	
<b>Surrogate</b>											
M8PFOA	335-67-1-EIS	11500	92	11700	NA	NA	12500	12000	96	50 - 150	
M8PFOS	1763-23-1-EIS	9350	75	9830	NA	NA	12500	9820	79	50 - 150	

<b>Analytical Batch</b> 681102	Client ID CF302	LAB ID 22003311107	CF302 DUP 22003311108	CF302 MS 22003311109							
<b>Prep Batch</b> 680807	Sample Type SAMPLE	Prep Date 03/31/2020 15:30	DUP 03/31/2020 15:30	MS 03/31/2020 15:30							
<b>Prep Method</b> EPA 537 Modified	Analysis Date 04/04/2020 17:03	Matrix Water	04/04/2020 17:14	04/04/2020 17:26							
<b>EPA 537 Modified</b>		Units Result	ng/L LOQ	Result	RPD	RPD Limit	Spike Added	Result	%R	Control Limits	%R
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.00	6250	0.00	0	30	46300	50100	108	70 - 130	
Perfluorooctanoic acid (PFOA)	335-67-1	0.00	6250	0.00	0	30	50000	46300	93	70 - 130	
<b>Surrogate</b>											
M8PFOA	335-67-1-EIS	12100	97	12300	NA	NA	12500	12100	97	50 - 150	
M8PFOS	1763-23-1-EIS	10200	81	10300	NA	NA	12500	9390	75	50 - 150	

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**Report#:** 220033111

**Project ID:** PFAS/PFOA-CF302

**Report Date:** 04/28/2020

## LC-MS/MS PFAS QC Summary

<b>Analytical Batch</b>		Client ID	CF302	CF302 DUP	CF302 MS					
681102		LAB ID	22003311110	22003311111	22003311112					
<b>Prep Batch</b>		Sample Type	SAMPLE	DUP	MS					
680807		Prep Date	03/31/2020 15:30	03/31/2020 15:30	03/31/2020 15:30					
<b>Prep Method</b>		Analysis Date	04/04/2020 17:48	04/04/2020 17:59	04/04/2020 18:10					
EPA 537 Modified		Matrix	Water	Water	Water					
<b>EPA 537 Modified</b>		Units Result	ng/L LOQ	Result	RPD	RPD Limit	Spike Added	Result	%R	Control Limits%R
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.00	6250	0.00	0	30	46300	45300	98	70 - 130
Perfluorooctanoic acid (PFOA)	335-67-1	0.00	6250	0.00	0	30	50000	43700	87	70 - 130
<b>Surrogate</b>										
M8PFOA	335-67-1-EIS	11400	91	11700	NA	NA	12500	11900	96	50 - 150
M8PFOS	1763-23-1-EIS	9820	79	10000	NA	NA	12500	9960	80	50 - 150

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**CHAIN-OF-CUSTODY Analytical Request Document**

*Pace Analytical*  
Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

Company: Firefreeze Worldwide Billing Information: 212 Rt. 46 East  
Rockaway NJ 07866  
 Address: 212 Rt. 46 Rockaway NJ  
 Report To: Stephanie Monrad Email To: S-monrad@firefreeze.com  
 Copy To: Eveline Giessler Site Collection Info/Address: Bronton NJ  
 Customer/Project Name/Number: PFAS/PFOA-CF302 State: NJ County/City: Morris Time Zone Collected: [ ] PT [ ] MT [ ] CT [ ] ET  
 Phone: 913 809 1477 Site/Facility ID #: FFW02 Compliance Monitoring? [X] Yes [ ] No  
 Email: Stephanie Monrad Purchase Order #: 32916 DW PWS ID #: \_\_\_\_\_ DW Location Code: \_\_\_\_\_  
 Collected By (print): Stephanie Monrad Quote #: \_\_\_\_\_  
 Collected By (signature): [Signature] Turnaround Date Required: quoted 10-15 days Immediately Packed on Ice: [X] Yes [ ] No  
 Sample Disposal: [ ] Dispose as appropriate [X] Return Rush: [ ] Same Day [ ] Next Day Field Filtered (if applicable): [ ] Yes [X] No  
[ ] Archive: [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day Analysis: N/A  
[ ] Hold: \_\_\_\_\_ (Expedite Charges Apply)

\* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
			Date	Time	Date	Time		
CF302	P		3/26	10:00	3/26	10:05		2
CF302	P		3/26	10:00	3/26	10:10		2
CF302	P		3/26	10:00	3/26	10:15		2
CF302	P		3/26	10:00	3/26	10:20		2

Customer Remarks / Special Conditions / Possible Hazards: n/a

Type of Ice Used: Wet Blue Dry None

Packing Material Used: 1662-0212-9875

Radchem sample(s) screened (<500 cpm): Y N NA

Relinquished by/Company: (Signature) <u>[Signature]</u>	Date/Time: <u>3/26 10:20am</u>	Received by/Company: (Signature) <u>[Signature]</u>	Date/Time: <u>3/26 10:20am</u>
Relinquished by/Company: (Signature) <u>FedEx</u>	Date/Time: <u>3/27/20 09:22</u>	Received by/Company: (Signature) <u>[Signature]</u>	Date/Time: <u>3/27/20 09:22</u>
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:

LAB USE ONLY- Affix Work

Client ID: 5045 - Firefreeze Worldwide Inc

SDG: 220033111

PM: AEC

ALL SHAD

Container Preservative Type:

\*\* Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Analyses										Lab Profile/Line:
										Lab Sample Receipt Checklist:
										Custody Seals Present/Intact Y N NA
										Custody Signatures Present Y N NA
										Collector Signature Present Y N NA
										Bottles Intact Y N NA
										Correct Bottles Y N NA
										Sufficient Volume Y N NA
										Samples Received on Ice Y N NA
										VOA - Headspace Acceptable Y N NA
										USDA Regulated Soils Y N NA
										Samples in Holding Time Y N NA
										Residual Chlorine Present Y N NA
										Cl Strips:
										Sample pH Acceptable Y N NA
										pH Strips:
										Sulfide Present Y N NA
										Lead Acetate Strips: _____

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: 2512855

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:

Temp Blank Received: Y N NA

Therm ID#: E34

Cooler 1 Temp Upon Receipt: \_\_\_\_\_ oC

Cooler 1 Therm Corr. Factor: \_\_\_\_\_ oC

Cooler 1 Corrected Temp: \_\_\_\_\_ oC

Comments: 0.4  
280PM

Trip Blank Received: Y N NA

HCL MeOH TSP Other

Non Conformance(s): YES / NO Page: \_\_\_\_\_ of: \_\_\_\_\_

Revision 1



# SAMPLE RECEIVING CHECKLIST



SAMPLE DELIVERY GROUP 220033111		CHECKLIST		YES	NO
<b>Client</b> PM AEC 5045 - Firefreeze Worldwide Inc	<b>Transport Method</b> FEDEX	Samples received with proper thermal preservation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
		Radioactivity is <1600 cpm? If no, record cpm value in notes section.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
		COC relinquished and complete (including sampleIDs, collect times, and sampler)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>Profile Number</b> 283554	<b>Received By</b> Savage, Tiffany R	All containers received in good condition and within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
		All sample labels and containers received match the chain of custody?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
		Preservative added to any containers?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
		If received, was headspace for VOC water containers < 6mm?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
		Samples collected in containers provided by Pace Gulf Coast?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
		<b>COOLERS</b>			
<b>Airbill</b>	<b>Thermometer ID:</b> E34	<b>Temp °C</b>	<b>DISCREPANCIES</b>		
1662-0212-9875		0.4	None		
			<b>LAB PRESERVATIONS</b>		
			None		
<b>NOTES</b>					