

Chemical Analysis Report

SE-DIST-2020-07-17-01

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **C-23 PFAS 4th event July 2020**

Request ID: **RQ-2020-07-13-59**

Customer: **SE-DIST**

Project ID: **DISTRICT**

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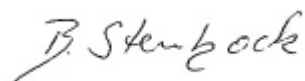
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Date Certified: 30-JUL-2020 14:58



Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical group are included in this report: Pesticides.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Spillway West of Murphy

Collection Date/Time: 07/16/2020 09:45

Field ID: Spillway West of Murphy

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184130	EPA 8321B	Perfluorooctanoic acid (PFOA)**	17		ng/L	P384949	
		Perfluorooctanesulfonic acid (PFOS)**	25		ng/L	P384949	
		Perfluorobutanesulfonic acid (PFBS)**	15		ng/L	P384949	
		Perfluorodecanoic acid (PFDA)**	1.0	U	ng/L	P384949	
		Perfluorododecanoic acid (PFDoA)**	1.0	U	ng/L	P384949	
		Perfluoroheptanoic acid (PFHpA)**	5.1	I	ng/L	P384949	
		Perfluorohexanesulfonic acid (PFHxS)**	2.4		ng/L	P384949	
		Perfluorohexanoic acid (PFHxA)**	8.7		ng/L	P384949	
		Perfluorononanoic acid (PFNA)**	2.8	I	ng/L	P384949	
		Perfluorotetradecanoic acid (PFTeA)**	0.40	U	ng/L	P384949	
		Perfluorotridecanoic acid (PFTriA)**	0.40	U	ng/L	P384949	
		Perfluoroundecanoic acid (PFUnA)**	1.0	U	ng/L	P384949	
		N-Me perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		N-Et perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		Perfluoropentanoic acid (PFPeA)**	11	I	ng/L	P384949	
		4:2 Fluorotelomer sulfonate (4:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoropentanesulfonic acid (PFPeS)**	0.40	U	ng/L	P384949	
		6:2 Fluorotelomer sulfonate (6:2 FTS)**	4.2	I	ng/L	P384949	
		8:2 Fluorotelomer sulfonate (8:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoroheptanesulfonic acid (PFHpS)**	0.40	U	ng/L	P384949	
		Perfluorononanesulfonic acid (PFNS)**	0.40	U	ng/L	P384949	
		Perfluorodecanesulfonic acid (PFDS)**	0.40	U	ng/L	P384949	
		Hexafluoropropylene oxide dimer acid**	1.0	U	ng/L	P384949	MS

Ref. Method and Comment:

EPA 8321B: MS accuracy for some analytes could not be assessed due to a high concentration of parameters in the spiked sample.

Sample Location: C-23 South of Savona

Collection Date/Time: 07/16/2020 10:35

Field ID: C-23 South of Savona

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184131	EPA 8321B	Perfluorooctanoic acid (PFOA)**	7.7		ng/L	P384949	
		Perfluorooctanesulfonic acid (PFOS)**	9.7		ng/L	P384949	
		Perfluorobutanesulfonic acid (PFBS)**	13		ng/L	P384949	
		Perfluorodecanoic acid (PFDA)**	1.0	U	ng/L	P384949	
		Perfluorododecanoic acid (PFDoA)**	1.0	U	ng/L	P384949	
		Perfluoroheptanoic acid (PFHpA)**	5.1	I	ng/L	P384949	
		Perfluorohexanesulfonic acid (PFHxS)**	2.0		ng/L	P384949	
		Perfluorohexanoic acid (PFHxA)**	5.4	I	ng/L	P384949	
		Perfluorononanoic acid (PFNA)**	1.0	U	ng/L	P384949	
		Perfluorotetradecanoic acid (PFTeA)**	0.40	U	ng/L	P384949	
		Perfluorotridecanoic acid (PFTriA)**	0.40	U	ng/L	P384949	
		Perfluoroundecanoic acid (PFUnA)**	1.0	U	ng/L	P384949	
		N-Me perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		N-Et perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		Perfluoropentanoic acid (PFPeA)**	8.7	I	ng/L	P384949	
		4:2 Fluorotelomer sulfonate (4:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoropentanesulfonic acid (PFPeS)**	0.40	U	ng/L	P384949	
		6:2 Fluorotelomer sulfonate (6:2 FTS)**	4.0	U	ng/L	P384949	
		8:2 Fluorotelomer sulfonate (8:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoroheptanesulfonic acid (PFHpS)**	0.40	U	ng/L	P384949	
		Perfluorononanesulfonic acid (PFNS)**	0.40	U	ng/L	P384949	
		Perfluorodecanesulfonic acid (PFDS)**	0.40	U	ng/L	P384949	
		Hexafluoropropylene oxide dimer acid**	1.0	U	ng/L	P384949	MS

Ref. Method and Comment:

EPA 8321B: MS accuracy for some analytes could not be assessed due to a high concentration of parameters in the spiked sample.

Sample Location: C-23 near small landfill

Collection Date/Time: 07/16/2020 11:00

Field ID: C-23 near small land fill

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184132	EPA 8321B	Perfluorooctanoic acid (PFOA)**	16		ng/L	P384949	
		Perfluorooctanesulfonic acid (PFOS)**	9.5		ng/L	P384949	
		Perfluorobutanesulfonic acid (PFBS)**	34		ng/L	P384949	
		Perfluorodecanoic acid (PFDA)**	1.0	U	ng/L	P384949	
		Perfluorododecanoic acid (PFDoA)**	1.0	U	ng/L	P384949	
		Perfluoroheptanoic acid (PFHpA)**	8.9		ng/L	P384949	
		Perfluorohexanesulfonic acid (PFHxS)**	1.9		ng/L	P384949	
		Perfluorohexanoic acid (PFHxA)**	10		ng/L	P384949	
		Perfluorononanoic acid (PFNA)**	1.2	I	ng/L	P384949	
		Perfluorotetradecanoic acid (PFTeA)**	0.40	U	ng/L	P384949	
		Perfluorotridecanoic acid (PFTriA)**	0.40	U	ng/L	P384949	
		Perfluoroundecanoic acid (PFUnA)**	1.0	U	ng/L	P384949	
		N-Me perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		N-Et perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		Perfluoropentanoic acid (PFPeA)**	12	I	ng/L	P384949	
		4:2 Fluorotelomer sulfonate (4:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoropentanesulfonic acid (PFPeS)**	0.40	U	ng/L	P384949	
		6:2 Fluorotelomer sulfonate (6:2 FTS)**	4.0	U	ng/L	P384949	
		8:2 Fluorotelomer sulfonate (8:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoroheptanesulfonic acid (PFHpS)**	0.40	U	ng/L	P384949	
		Perfluorononanesulfonic acid (PFNS)**	0.40	U	ng/L	P384949	
		Perfluorodecanesulfonic acid (PFDS)**	0.40	U	ng/L	P384949	
		Hexafluoropropylene oxide dimer acid**	1.0	U	ng/L	P384949	MS

Ref. Method and Comment:

EPA 8321B: MS accuracy for some analytes could not be assessed due to a high concentration of parameters in the spiked sample.

Sample Location: Canal East of Bridge

Collection Date/Time: 07/16/2020 11:20

Field ID: Canal East of Bridge

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184133	EPA 8321B	Perfluorooctanoic acid (PFOA)**	50		ng/L	P384949	
		Perfluorooctanesulfonic acid (PFOS)**	120		ng/L	P384949	
		Perfluorobutanesulfonic acid (PFBS)**	2.8		ng/L	P384949	
		Perfluorodecanoic acid (PFDA)**	2.2	I	ng/L	P384949	
		Perfluorododecanoic acid (PFDoA)**	1.0	U	ng/L	P384949	
		Perfluoroheptanoic acid (PFHpA)**	21		ng/L	P384949	
		Perfluorohexanesulfonic acid (PFHxS)**	19		ng/L	P384949	
		Perfluorohexanoic acid (PFHxA)**	22		ng/L	P384949	
		Perfluorononanoic acid (PFNA)**	8.3		ng/L	P384949	
		Perfluorotetradecanoic acid (PFTeA)**	0.40	U	ng/L	P384949	
		Perfluorotridecanoic acid (PFTriA)**	0.40	U	ng/L	P384949	
		Perfluoroundecanoic acid (PFUnA)**	1.0	U	ng/L	P384949	
		N-Me perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		N-Et perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		Perfluoropentanoic acid (PFPeA)**	17		ng/L	P384949	
		4:2 Fluorotelomer sulfonate (4:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoropentanesulfonic acid (PFPeS)**	1.9		ng/L	P384949	
		6:2 Fluorotelomer sulfonate (6:2 FTS)**	4.0	U	ng/L	P384949	
		8:2 Fluorotelomer sulfonate (8:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoroheptanesulfonic acid (PFHpS)**	2.1		ng/L	P384949	
		Perfluorononanesulfonic acid (PFNS)**	0.40	U	ng/L	P384949	
		Perfluorodecanesulfonic acid (PFDS)**	0.40	U	ng/L	P384949	
		Hexafluoropropylene oxide dimer acid**	1.0	U	ng/L	P384949	MS

Ref. Method and Comment:

EPA 8321B: MS accuracy for some analytes could not be assessed due to a high concentration of parameters in the spiked sample.

Sample Location: Allapattah Bridge

Collection Date/Time: 07/16/2020 11:30

Field ID: Allapattah Bridge

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184134	EPA 8321B	Perfluorooctanoic acid (PFOA)**	13		ng/L	P384949	
		Perfluorooctanesulfonic acid (PFOS)**	11		ng/L	P384949	
		Perfluorobutanesulfonic acid (PFBS)**	53		ng/L	P384949	
		Perfluorodecanoic acid (PFDA)**	1.0	U	ng/L	P384949	
		Perfluorododecanoic acid (PFDoA)**	1.0	U	ng/L	P384949	
		Perfluoroheptanoic acid (PFHpA)**	13		ng/L	P384949	
		Perfluorohexanesulfonic acid (PFHxS)**	1.4	I	ng/L	P384949	
		Perfluorohexanoic acid (PFHxA)**	9.1		ng/L	P384949	
		Perfluorononanoic acid (PFNA)**	1.0	U	ng/L	P384949	
		Perfluorotetradecanoic acid (PFTeA)**	0.40	U	ng/L	P384949	
		Perfluorotridecanoic acid (PFTriA)**	0.40	U	ng/L	P384949	
		Perfluoroundecanoic acid (PFUnA)**	1.0	U	ng/L	P384949	
		N-Me perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		N-Et perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		Perfluoropentanoic acid (PFPeA)**	14	I	ng/L	P384949	
		4:2 Fluorotelomer sulfonate (4:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoropentanesulfonic acid (PFPeS)**	0.40	U	ng/L	P384949	
		6:2 Fluorotelomer sulfonate (6:2 FTS)**	4.0	U	ng/L	P384949	
		8:2 Fluorotelomer sulfonate (8:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoroheptanesulfonic acid (PFHpS)**	0.40	U	ng/L	P384949	
		Perfluorononanesulfonic acid (PFNS)**	0.40	U	ng/L	P384949	
		Perfluorodecanesulfonic acid (PFDS)**	0.40	U	ng/L	P384949	
		Hexafluoropropylene oxide dimer acid**	1.0	U	ng/L	P384949	MS

Ref. Method and Comment:

EPA 8321B: MS accuracy for some analytes could not be assessed due to a high concentration of parameters in the spiked sample.

Sample Location: Canal 800m West of Bridge

Collection Date/Time: 07/16/2020 11:45

Field ID: Canal 800m West of Bridge

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184135	EPA 8321B	Perfluorooctanoic acid (PFOA)**	12		ng/L	P384949	
		Perfluorooctanesulfonic acid (PFOS)**	11		ng/L	P384949	
		Perfluorobutanesulfonic acid (PFBS)**	59		ng/L	P384949	
		Perfluorodecanoic acid (PFDA)**	1.0	U	ng/L	P384949	
		Perfluorododecanoic acid (PFDoA)**	1.0	U	ng/L	P384949	
		Perfluoroheptanoic acid (PFHpA)**	12		ng/L	P384949	
		Perfluorohexanesulfonic acid (PFHxS)**	1.5	I	ng/L	P384949	
		Perfluorohexanoic acid (PFHxA)**	12		ng/L	P384949	
		Perfluorononanoic acid (PFNA)**	1.0	U	ng/L	P384949	
		Perfluorotetradecanoic acid (PFTeA)**	0.40	U	ng/L	P384949	
		Perfluorotridecanoic acid (PFTriA)**	0.40	U	ng/L	P384949	
		Perfluoroundecanoic acid (PFUnA)**	1.0	U	ng/L	P384949	
		N-Me perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		N-Et perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		Perfluoropentanoic acid (PFPeA)**	14	I	ng/L	P384949	
		4:2 Fluorotelomer sulfonate (4:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoropentanesulfonic acid (PFPeS)**	0.40	U	ng/L	P384949	
		6:2 Fluorotelomer sulfonate (6:2 FTS)**	6.0	I	ng/L	P384949	
		8:2 Fluorotelomer sulfonate (8:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoroheptanesulfonic acid (PFHpS)**	0.40	U	ng/L	P384949	
		Perfluorononanesulfonic acid (PFNS)**	0.40	U	ng/L	P384949	
		Perfluorodecanesulfonic acid (PFDS)**	0.40	U	ng/L	P384949	
		Hexafluoropropylene oxide dimer acid**	1.0	U	ng/L	P384949	MS

Ref. Method and Comment:

EPA 8321B: MS accuracy for some analytes could not be assessed due to a high concentration of parameters in the spiked sample.

Sample Location: Canal 170m West of Bridge

Collection Date/Time: 07/16/2020 12:00

Field ID: Canal 170m West of Bridge

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184136	EPA 8321B	Perfluorooctanoic acid (PFOA)**	3.1	I	ng/L	P384949	
		Perfluorooctanesulfonic acid (PFOS)**	12		ng/L	P384949	
		Perfluorobutanesulfonic acid (PFBS)**	9.5		ng/L	P384949	
		Perfluorodecanoic acid (PFDA)**	1.0	U	ng/L	P384949	
		Perfluorododecanoic acid (PFDoA)**	1.0	U	ng/L	P384949	
		Perfluoroheptanoic acid (PFHpA)**	2.3	I	ng/L	P384949	
		Perfluorohexanesulfonic acid (PFHxS)**	0.69	I	ng/L	P384949	
		Perfluorohexanoic acid (PFHxA)**	7.5	I	ng/L	P384949	
		Perfluorononanoic acid (PFNA)**	1.0	U	ng/L	P384949	
		Perfluorotetradecanoic acid (PFTeA)**	0.40	U	ng/L	P384949	
		Perfluorotridecanoic acid (PFTriA)**	0.40	U	ng/L	P384949	
		Perfluoroundecanoic acid (PFUnA)**	1.0	U	ng/L	P384949	
		N-Me perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		N-Et perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		Perfluoropentanoic acid (PFPeA)**	8.2	I	ng/L	P384949	
		4:2 Fluorotelomer sulfonate (4:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoropentanesulfonic acid (PFPeS)**	0.40	U	ng/L	P384949	
		6:2 Fluorotelomer sulfonate (6:2 FTS)**	4.0	U	ng/L	P384949	
		8:2 Fluorotelomer sulfonate (8:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoroheptanesulfonic acid (PFHpS)**	0.40	U	ng/L	P384949	
		Perfluorononanesulfonic acid (PFNS)**	0.40	U	ng/L	P384949	
		Perfluorodecanesulfonic acid (PFDS)**	0.40	U	ng/L	P384949	
		Hexafluoropropylene oxide dimer acid**	1.0	U	ng/L	P384949	MS

Ref. Method and Comment:

EPA 8321B: MS accuracy for some analytes could not be assessed due to a high concentration of parameters in the spiked sample.

Sample Location: Upstream of MCCF

Collection Date/Time: 07/16/2020 12:15

Field ID: Upstream of MCCF

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184137	EPA 8321B	Perfluorooctanoic acid (PFOA)**	11		ng/L	P384949	
		Perfluorooctanesulfonic acid (PFOS)**	12		ng/L	P384949	
		Perfluorobutanesulfonic acid (PFBS)**	63		ng/L	P384949	
		Perfluorodecanoic acid (PFDA)**	1.0	U	ng/L	P384949	
		Perfluorododecanoic acid (PFDoA)**	1.0	U	ng/L	P384949	
		Perfluoroheptanoic acid (PFHpA)**	13		ng/L	P384949	
		Perfluorohexanesulfonic acid (PFHxS)**	1.6	I	ng/L	P384949	
		Perfluorohexanoic acid (PFHxA)**	11		ng/L	P384949	
		Perfluorononanoic acid (PFNA)**	1.0	U	ng/L	P384949	
		Perfluorotetradecanoic acid (PFTeA)**	0.40	U	ng/L	P384949	
		Perfluorotridecanoic acid (PFTriA)**	0.40	U	ng/L	P384949	
		Perfluoroundecanoic acid (PFUnA)**	1.0	U	ng/L	P384949	
		N-Me perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		N-Et perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		Perfluoropentanoic acid (PFPeA)**	10	I	ng/L	P384949	
		4:2 Fluorotelomer sulfonate (4:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoropentanesulfonic acid (PFPeS)**	0.40	U	ng/L	P384949	
		6:2 Fluorotelomer sulfonate (6:2 FTS)**	4.9	I	ng/L	P384949	
		8:2 Fluorotelomer sulfonate (8:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoroheptanesulfonic acid (PFHpS)**	0.40	U	ng/L	P384949	
		Perfluorononanesulfonic acid (PFNS)**	0.40	U	ng/L	P384949	
		Perfluorodecanesulfonic acid (PFDS)**	0.40	U	ng/L	P384949	
		Hexafluoropropylene oxide dimer acid**	1.0	U	ng/L	P384949	MS

Ref. Method and Comment:

EPA 8321B: MS accuracy for some analytes could not be assessed due to a high concentration of parameters in the spiked sample.

Sample Location: SW Hosanah

Collection Date/Time: 07/16/2020 12:35

Field ID: SW Hosanak

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184138	EPA 8321B	Perfluorooctanoic acid (PFOA)**	15		ng/L	P384949	
		Perfluorooctanesulfonic acid (PFOS)**	10		ng/L	P384949	
		Perfluorobutanesulfonic acid (PFBS)**	63		ng/L	P384949	
		Perfluorodecanoic acid (PFDA)**	1.0	U	ng/L	P384949	
		Perfluorododecanoic acid (PFDoA)**	1.0	U	ng/L	P384949	
		Perfluoroheptanoic acid (PFHpA)**	13		ng/L	P384949	
		Perfluorohexanesulfonic acid (PFHxS)**	1.3	I	ng/L	P384949	
		Perfluorohexanoic acid (PFHxA)**	16		ng/L	P384949	
		Perfluorononanoic acid (PFNA)**	1.1	I	ng/L	P384949	
		Perfluorotetradecanoic acid (PFTeA)**	0.40	U	ng/L	P384949	
		Perfluorotridecanoic acid (PFTriA)**	0.40	U	ng/L	P384949	
		Perfluoroundecanoic acid (PFUnA)**	1.0	U	ng/L	P384949	
		N-Me perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		N-Et perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		Perfluoropentanoic acid (PFPeA)**	15	I	ng/L	P384949	
		4:2 Fluorotelomer sulfonate (4:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoropentanesulfonic acid (PFPeS)**	0.40	U	ng/L	P384949	
		6:2 Fluorotelomer sulfonate (6:2 FTS)**	4.0	U	ng/L	P384949	
		8:2 Fluorotelomer sulfonate (8:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoroheptanesulfonic acid (PFHpS)**	0.40	U	ng/L	P384949	
		Perfluorononanesulfonic acid (PFNS)**	0.40	U	ng/L	P384949	
		Perfluorodecanesulfonic acid (PFDS)**	0.40	U	ng/L	P384949	
		Hexafluoropropylene oxide dimer acid**	1.0	U	ng/L	P384949	MS

Ref. Method and Comment:

EPA 8321B: MS accuracy for some analytes could not be assessed due to a high concentration of parameters in the spiked sample.

Sample Location: Dup SW Hosanah

Collection Date/Time: 07/16/2020 12:40

Field ID: Dup SW Hosanah

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184139	EPA 8321B	Perfluorooctanoic acid (PFOA)**	13		ng/L	P384949	
		Perfluorooctanesulfonic acid (PFOS)**	11		ng/L	P384949	
		Perfluorobutanesulfonic acid (PFBS)**	64		ng/L	P384949	
		Perfluorodecanoic acid (PFDA)**	1.0	U	ng/L	P384949	
		Perfluorododecanoic acid (PFDoA)**	1.0	U	ng/L	P384949	
		Perfluoroheptanoic acid (PFHpA)**	14		ng/L	P384949	
		Perfluorohexanesulfonic acid (PFHxS)**	1.3	I	ng/L	P384949	
		Perfluorohexanoic acid (PFHxA)**	15		ng/L	P384949	
		Perfluorononanoic acid (PFNA)**	1.1	I	ng/L	P384949	
		Perfluorotetradecanoic acid (PFTeA)**	0.40	U	ng/L	P384949	
		Perfluorotridecanoic acid (PFTriA)**	0.40	U	ng/L	P384949	
		Perfluoroundecanoic acid (PFUnA)**	1.0	U	ng/L	P384949	
		N-Me perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		N-Et perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		Perfluoropentanoic acid (PFPeA)**	16	I	ng/L	P384949	
		4:2 Fluorotelomer sulfonate (4:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoropentanesulfonic acid (PFPeS)**	0.40	U	ng/L	P384949	
		6:2 Fluorotelomer sulfonate (6:2 FTS)**	4.0	U	ng/L	P384949	
		8:2 Fluorotelomer sulfonate (8:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoroheptanesulfonic acid (PFHpS)**	0.40	U	ng/L	P384949	
		Perfluorononanesulfonic acid (PFNS)**	0.40	U	ng/L	P384949	
		Perfluorodecanesulfonic acid (PFDS)**	0.40	U	ng/L	P384949	
		Hexafluoropropylene oxide dimer acid**	1.0	U	ng/L	P384949	MS

Ref. Method and Comment:

EPA 8321B: MS accuracy for some analytes could not be assessed due to a high concentration of parameters in the spiked sample.

Sample Location: NW of PC 49

Collection Date/Time: 07/16/2020 13:10

Field ID: NW of PC 49

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184140	EPA 8321B	Perfluorooctanoic acid (PFOA)**	13		ng/L	P384949	
		Perfluorooctanesulfonic acid (PFOS)**	9.2		ng/L	P384949	
		Perfluorobutanesulfonic acid (PFBS)**	33		ng/L	P384949	
		Perfluorodecanoic acid (PFDA)**	1.0	U	ng/L	P384949	
		Perfluorododecanoic acid (PFDoA)**	1.0	U	ng/L	P384949	
		Perfluoroheptanoic acid (PFHpA)**	10		ng/L	P384949	
		Perfluorohexanesulfonic acid (PFHxS)**	0.96	I	ng/L	P384949	
		Perfluorohexanoic acid (PFHxA)**	8.2		ng/L	P384949	
		Perfluorononanoic acid (PFNA)**	1.0	U	ng/L	P384949	
		Perfluorotetradecanoic acid (PFTeA)**	0.40	U	ng/L	P384949	
		Perfluorotridecanoic acid (PFTriA)**	0.40	U	ng/L	P384949	
		Perfluoroundecanoic acid (PFUnA)**	1.0	U	ng/L	P384949	
		N-Me perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		N-Et perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		Perfluoropentanoic acid (PFPeA)**	11	I	ng/L	P384949	
		4:2 Fluorotelomer sulfonate (4:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoropentanesulfonic acid (PFPeS)**	0.40	U	ng/L	P384949	
		6:2 Fluorotelomer sulfonate (6:2 FTS)**	4.0	U	ng/L	P384949	
		8:2 Fluorotelomer sulfonate (8:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoroheptanesulfonic acid (PFHpS)**	0.40	U	ng/L	P384949	
		Perfluorononanesulfonic acid (PFNS)**	0.40	U	ng/L	P384949	
		Perfluorodecanesulfonic acid (PFDS)**	0.40	U	ng/L	P384949	
		Hexafluoropropylene oxide dimer acid**	1.0	U	ng/L	P384949	MS

Ref. Method and Comment:

EPA 8321B: MS accuracy for some analytes could not be assessed due to a high concentration of parameters in the spiked sample.

Sample Location: FRB

Collection Date/Time: 07/16/2020 13:20

Field ID: FRB

Matrix: W-FRB

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184142	EPA 8321B	Perfluorooctanoic acid (PFOA)**	1.0	U	ng/L	P384949	
		Perfluorooctanesulfonic acid (PFOS)**	2.0	U	ng/L	P384949	
		Perfluorobutanesulfonic acid (PFBS)**	0.40	U	ng/L	P384949	
		Perfluorodecanoic acid (PFDA)**	1.0	U	ng/L	P384949	
		Perfluorododecanoic acid (PFDoA)**	1.0	U	ng/L	P384949	
		Perfluoroheptanoic acid (PFHpA)**	2.0	U	ng/L	P384949	
		Perfluorohexanesulfonic acid (PFHxS)**	0.40	U	ng/L	P384949	
		Perfluorohexanoic acid (PFHxA)**	2.0	U	ng/L	P384949	
		Perfluorononanoic acid (PFNA)**	1.0	U	ng/L	P384949	
		Perfluorotetradecanoic acid (PFTeA)**	0.40	U	ng/L	P384949	
		Perfluorotridecanoic acid (PFTriA)**	0.40	U	ng/L	P384949	
		Perfluoroundecanoic acid (PFUnA)**	1.0	U	ng/L	P384949	
		N-Me perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		N-Et perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		Perfluoropentanoic acid (PFPeA)**	4.0	U	ng/L	P384949	
		4:2 Fluorotelomer sulfonate (4:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoropentanesulfonic acid (PFPeS)**	0.40	U	ng/L	P384949	
		6:2 Fluorotelomer sulfonate (6:2 FTS)**	4.0	U	ng/L	P384949	
		8:2 Fluorotelomer sulfonate (8:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoroheptanesulfonic acid (PFHpS)**	0.40	U	ng/L	P384949	
		Perfluorononanesulfonic acid (PFNS)**	0.40	U	ng/L	P384949	
		Perfluorodecanesulfonic acid (PFDS)**	0.40	U	ng/L	P384949	
		Hexafluoropropylene oxide dimer acid**	1.0	U	ng/L	P384949	MS

Ref. Method and Comment:

EPA 8321B: MS accuracy for some analytes could not be assessed due to a high concentration of parameters in the spiked sample.

Sample Location: N of G78

Collection Date/Time: 07/16/2020 13:30

Field ID: N of G78

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184141	EPA 8321B	Perfluorooctanoic acid (PFOA)**	5.2		ng/L	P384949	
		Perfluorooctanesulfonic acid (PFOS)**	23		ng/L	P384949	
		Perfluorobutanesulfonic acid (PFBS)**	8.9		ng/L	P384949	
		Perfluorodecanoic acid (PFDA)**	1.0	U	ng/L	P384949	
		Perfluorododecanoic acid (PFDoA)**	1.0	U	ng/L	P384949	
		Perfluoroheptanoic acid (PFHpA)**	2.8	I	ng/L	P384949	
		Perfluorohexanesulfonic acid (PFHxS)**	1.1	I	ng/L	P384949	
		Perfluorohexanoic acid (PFHxA)**	4.5	I	ng/L	P384949	
		Perfluorononanoic acid (PFNA)**	1.0	U	ng/L	P384949	
		Perfluorotetradecanoic acid (PFTeA)**	0.40	U	ng/L	P384949	
		Perfluorotridecanoic acid (PFTriA)**	0.40	U	ng/L	P384949	
		Perfluoroundecanoic acid (PFUnA)**	1.0	U	ng/L	P384949	
		N-Me perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		N-Et perfluorooctanesulfonamidoAcid**	0.40	U	ng/L	P384949	
		Perfluoropentanoic acid (PFPeA)**	4.0	U	ng/L	P384949	
		4:2 Fluorotelomer sulfonate (4:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoropentanesulfonic acid (PFPeS)**	0.40	U	ng/L	P384949	
		6:2 Fluorotelomer sulfonate (6:2 FTS)**	4.0	U	ng/L	P384949	
		8:2 Fluorotelomer sulfonate (8:2 FTS)**	2.0	U	ng/L	P384949	
		Perfluoroheptanesulfonic acid (PFHpS)**	0.40	U	ng/L	P384949	
		Perfluorononanesulfonic acid (PFNS)**	0.40	U	ng/L	P384949	
		Perfluorodecanesulfonic acid (PFDS)**	0.40	U	ng/L	P384949	
		Hexafluoropropylene oxide dimer acid**	1.0	U	ng/L	P384949	MS

Ref. Method and Comment:

EPA 8321B: MS accuracy for some analytes could not be assessed due to a high concentration of parameters in the spiked sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B

Batch ID: P384949

Component	Result	Code	Units
4:2 Fluorotelomer sulfonate (4:2 FTS)	2.0	U	ng/L
6:2 Fluorotelomer sulfonate (6:2 FTS)	4.0	U	ng/L
8:2 Fluorotelomer sulfonate (8:2 FTS)	2.0	U	ng/L
Hexafluoropropylene oxide dimer acid	1.0	U	ng/L
N-Et perfluorooctanesulfonamidoAc acid	0.40	U	ng/L
N-Me perfluorooctanesulfonamidoAc acid	0.40	U	ng/L
Perfluorobutanesulfonic acid (PFBS)	0.40	U	ng/L
Perfluorodecanesulfonic acid (PFDS)	0.40	U	ng/L
Perfluorodecanoic acid (PFDA)	1.0	U	ng/L
Perfluorododecanoic acid (PFDoA)	1.0	U	ng/L
Perfluoroheptanesulfonic acid (PFHpS)	0.40	U	ng/L
Perfluoroheptanoic acid (PFHpA)	2.0	U	ng/L
Perfluorohexanesulfonic acid (PFHxS)	0.40	U	ng/L
Perfluorohexanoic acid (PFHxA)	2.0	U	ng/L
Perfluorononanesulfonic acid (PFNS)	0.40	U	ng/L
Perfluorononanoic acid (PFNA)	1.0	U	ng/L
Perfluorooctanesulfonic acid (PFOS)	2.0	U	ng/L
Perfluorooctanoic acid (PFOA)	1.0	U	ng/L
Perfluoropentanesulfonic acid (PFPeS)	0.40	U	ng/L
Perfluoropentanoic acid (PFPeA)	4.0	U	ng/L
Perfluorotetradecanoic acid (PFTeA)	0.40	U	ng/L
Perfluorotridecanoic acid (PFTriA)	0.40	U	ng/L
Perfluoroundecanoic acid (PFUnA)	1.0	U	ng/L

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B

Batch ID: P384949

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
4:2 Fluorotelomer sulfonate (4:2 FTS)	105		P	30 - 160
6:2 Fluorotelomer sulfonate (6:2 FTS)	132		P	30 - 160
8:2 Fluorotelomer sulfonate (8:2 FTS)	116		P	30 - 160
Hexafluoropropylene oxide dimer acid	159		P	30 - 160
N-Et perfluorooctanesulfonamidoAc acid	121		P	30 - 160
N-Me perfluorooctanesulfonamidoAc acid	124		P	30 - 160
Perfluorobutanesulfonic acid (PFBS)	159		P	30 - 160
Perfluorodecanesulfonic acid (PFDS)	121		P	30 - 160
Perfluorodecanoic acid (PFDA)	117		P	30 - 160
Perfluorododecanoic acid (PFDoA)	107		P	30 - 160
Perfluoroheptanesulfonic acid (PFHpS)	159		P	30 - 160
Perfluoroheptanoic acid (PFHpA)	131		P	30 - 160
Perfluorohexanesulfonic acid (PFHxS)	145		P	30 - 160
Perfluorohexanoic acid (PFHxA)	108		P	30 - 160
Perfluorononanesulfonic acid (PFNS)	132		P	30 - 160
Perfluorononanoic acid (PFNA)	142		P	30 - 160
Perfluorooctanesulfonic acid (PFOS)	148		P	30 - 160
Perfluorooctanoic acid (PFOA)	131		P	30 - 160
Perfluoropentanesulfonic acid (PFPeS)	135		P	30 - 160
Perfluoropentanoic acid (PFPeA)	97.9		P	30 - 160
Perfluorotetradecanoic acid (PFTeA)	86.0		P	30 - 160
Perfluorotridecanoic acid (PFTriA)	79.4		P	30 - 160
Perfluoroundecanoic acid (PFUnA)	108		P	30 - 160

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B

Batch ID: P384949

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2184125	4:2 Fluorotelomer sulfonate (4:2 FTS)	156	135	P/P	30 - 160
2184125	6:2 Fluorotelomer sulfonate (6:2 FTS)	74.0	64.0	P/P	30 - 160
2184125	8:2 Fluorotelomer sulfonate (8:2 FTS)	126	116	P/P	30 - 160
2184125	Hexafluoropropylene oxide dimer acid	184	182	F/F	30 - 160
2184125	N-Et perfluorooctanesulfonamidoAc acid	111	103	P/P	30 - 160
2184125	N-Me perfluorooctanesulfonamidoAc acid	133	122	P/P	30 - 160
2184125	Perfluorodecanesulfonic acid (PFDS)	96.3	89.5	P/P	30 - 160
2184125	Perfluorodecanoic acid (PFDA)	105	116	P/P	30 - 160
2184125	Perfluorododecanoic acid (PFDoA)	90.0	74.8	P/P	30 - 160
2184125	Perfluoroheptanesulfonic acid (PFHpS)	106	120	P/P	30 - 160
2184125	Perfluoroheptanoic acid (PFHpA)	132	147	P/P	30 - 160
2184125	Perfluorononanesulfonic acid (PFNS)	115	108	P/P	30 - 160
2184125	Perfluorononanoic acid (PFNA)	122	122	P/P	30 - 160
2184125	Perfluorooctanoic acid (PFOA)	129	97.8	P/P	30 - 160
2184125	Perfluoropentanesulfonic acid (PFPeS)	138	133	P/P	30 - 160
2184125	Perfluorotetradecanoic acid (PFTeA)	90.4	76.6	P/P	30 - 160
2184125	Perfluorotridecanoic acid (PFTriA)	61.5	67.5	P/P	30 - 160
2184125	Perfluoroundecanoic acid (PFUnA)	86.5	94.4	P/P	30 - 160

Quality Assurance Report Precision

Reference Method: EPA 8321B

Batch ID: P384949

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184125	4:2 Fluorotelomer sulfonate (4:2 FTS)	14.4	Spike	P	0 - 30
2184125	6:2 Fluorotelomer sulfonate (6:2 FTS)	14.5	Spike	P	0 - 30
2184125	8:2 Fluorotelomer sulfonate (8:2 FTS)	8.13	Spike	P	0 - 30
2184125	Hexafluoropropylene oxide dimer acid	1.53	Spike	P	0 - 30
2184125	N-Et perfluorooctanesulfonamidoAc acid	7.35	Spike	P	0 - 30
2184125	N-Me perfluorooctanesulfonamidoAc acid	8.73	Spike	P	0 - 30
2184125	Perfluorobutanesulfonic acid (PFBS)	4.58	Spike	P	0 - 30
2184125	Perfluorodecanesulfonic acid (PFDS)	7.34	Spike	P	0 - 30
2184125	Perfluorodecanoic acid (PFDA)	10.1	Spike	P	0 - 30
2184125	Perfluorododecanoic acid (PFDoA)	18.5	Spike	P	0 - 30
2184125	Perfluoroheptanesulfonic acid (PFHpS)	12.4	Spike	P	0 - 30
2184125	Perfluoroheptanoic acid (PFHpA)	8.28	Spike	P	0 - 30
2184125	Perfluorohexanesulfonic acid (PFHxS)	2.56	Spike	P	0 - 30
2184125	Perfluorohexanoic acid (PFHxA)	16.9	Spike	P	0 - 30
2184125	Perfluorononanesulfonic acid (PFNS)	5.99	Spike	P	0 - 30
2184125	Perfluorononanoic acid (PFNA)	0.200	Spike	P	0 - 30
2184125	Perfluorooctanesulfonic acid (PFOS)	7.33	Spike	P	0 - 30
2184125	Perfluorooctanoic acid (PFOA)	17.0	Spike	P	0 - 30
2184125	Perfluoropentanesulfonic acid (PFPeS)	2.79	Spike	P	0 - 30
2184125	Perfluoropentanoic acid (PFPeA)	3.92	Spike	P	0 - 30
2184125	Perfluorotetradecanoic acid (PFTeA)	16.6	Spike	P	0 - 30
2184125	Perfluorotridecanoic acid (PFTriA)	9.25	Spike	P	0 - 30
2184125	Perfluoroundecanoic acid (PFUnA)	8.79	Spike	P	0 - 30

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Surrogates

Lab Sample ID: 2184130

Field Sample ID: Spillway West of Murphy

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Hexafluoropropylene oxide dimer acid-13C	108	P	30 - 160
EPA 8321B	Perfluorobutanesulfonate-13C	85.2	P	30 - 160
EPA 8321B	Perfluorodecanoic acid-13C	76.2	P	30 - 160
EPA 8321B	Perfluorohexanesulfonate-13C	94.8	P	30 - 160
EPA 8321B	Perfluorohexanoic acid-13C	137	P	30 - 160

Lab Sample ID: 2184131

Field Sample ID: C-23 South of Savona

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Hexafluoropropylene oxide dimer acid-13C	64.4	P	30 - 160
EPA 8321B	Perfluorobutanesulfonate-13C	93.7	P	30 - 160
EPA 8321B	Perfluorodecanoic acid-13C	49.2	P	30 - 160
EPA 8321B	Perfluorohexanesulfonate-13C	102	P	30 - 160
EPA 8321B	Perfluorohexanoic acid-13C	72.2	P	30 - 160

Lab Sample ID: 2184132

Field Sample ID: C-23 near small land fill

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Hexafluoropropylene oxide dimer acid-13C	105	P	30 - 160
EPA 8321B	Perfluorobutanesulfonate-13C	103	P	30 - 160
EPA 8321B	Perfluorodecanoic acid-13C	74.5	P	30 - 160
EPA 8321B	Perfluorohexanesulfonate-13C	114	P	30 - 160
EPA 8321B	Perfluorohexanoic acid-13C	134	P	30 - 160

Lab Sample ID: 2184133

Field Sample ID: Canal East of Bridge

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Hexafluoropropylene oxide dimer acid-13C	82.8	P	30 - 160
EPA 8321B	Perfluorobutanesulfonate-13C	97.4	P	30 - 160
EPA 8321B	Perfluorodecanoic acid-13C	64.3	P	30 - 160
EPA 8321B	Perfluorohexanesulfonate-13C	118	P	30 - 160
EPA 8321B	Perfluorohexanoic acid-13C	83.1	P	30 - 160

Lab Sample ID: 2184134

Field Sample ID: Allapattah Bridge

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Hexafluoropropylene oxide dimer acid-13C	131	P	30 - 160
EPA 8321B	Perfluorobutanesulfonate-13C	142	P	30 - 160
EPA 8321B	Perfluorodecanoic acid-13C	73.4	P	30 - 160
EPA 8321B	Perfluorohexanesulfonate-13C	150	P	30 - 160
EPA 8321B	Perfluorohexanoic acid-13C	75.5	P	30 - 160

Lab Sample ID: 2184135

Field Sample ID: Canal 800m West of Bridge

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Hexafluoropropylene oxide dimer acid-13C	128	P	30 - 160
EPA 8321B	Perfluorobutanesulfonate-13C	135	P	30 - 160

Quality Assurance Report Surrogates

Lab Sample ID: 2184135

Field Sample ID: Canal 800m West of Bridge

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Perfluorodecanoic acid-13C	77.5	P	30 - 160
EPA 8321B	Perfluorohexanesulfonate-13C	136	P	30 - 160
EPA 8321B	Perfluorohexanoic acid-13C	79.4	P	30 - 160

Lab Sample ID: 2184136

Field Sample ID: Canal 170m West of Bridge

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Hexafluoropropylene oxide dimer acid-13C	127	P	30 - 160
EPA 8321B	Perfluorobutanesulfonate-13C	129	P	30 - 160
EPA 8321B	Perfluorodecanoic acid-13C	78.7	P	30 - 160
EPA 8321B	Perfluorohexanesulfonate-13C	128	P	30 - 160
EPA 8321B	Perfluorohexanoic acid-13C	63.5	P	30 - 160

Lab Sample ID: 2184137

Field Sample ID: Upstream of MCCF

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Hexafluoropropylene oxide dimer acid-13C	136	P	30 - 160
EPA 8321B	Perfluorobutanesulfonate-13C	157	P	30 - 160
EPA 8321B	Perfluorodecanoic acid-13C	72.4	P	30 - 160
EPA 8321B	Perfluorohexanesulfonate-13C	157	P	30 - 160
EPA 8321B	Perfluorohexanoic acid-13C	68.2	P	30 - 160

Lab Sample ID: 2184138

Field Sample ID: SW Hosanak

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Hexafluoropropylene oxide dimer acid-13C	124	P	30 - 160
EPA 8321B	Perfluorobutanesulfonate-13C	124	P	30 - 160
EPA 8321B	Perfluorodecanoic acid-13C	94.8	P	30 - 160
EPA 8321B	Perfluorohexanesulfonate-13C	127	P	30 - 160
EPA 8321B	Perfluorohexanoic acid-13C	101	P	30 - 160

Lab Sample ID: 2184139

Field Sample ID: Dup SW Hosanah

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Hexafluoropropylene oxide dimer acid-13C	139	P	30 - 160
EPA 8321B	Perfluorobutanesulfonate-13C	126	P	30 - 160
EPA 8321B	Perfluorodecanoic acid-13C	69.4	P	30 - 160
EPA 8321B	Perfluorohexanesulfonate-13C	122	P	30 - 160
EPA 8321B	Perfluorohexanoic acid-13C	87.4	P	30 - 160

Lab Sample ID: 2184140

Field Sample ID: NW of PC 49

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Hexafluoropropylene oxide dimer acid-13C	117	P	30 - 160
EPA 8321B	Perfluorobutanesulfonate-13C	138	P	30 - 160
EPA 8321B	Perfluorodecanoic acid-13C	67.8	P	30 - 160
EPA 8321B	Perfluorohexanesulfonate-13C	140	P	30 - 160

Quality Assurance Report Surrogates

Lab Sample ID: 2184140
Field Sample ID: NW of PC 49

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Perfluorohexanoic acid-13C	66.5	P	30 - 160

Lab Sample ID: 2184141
Field Sample ID: N of G78

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Hexafluoropropylene oxide dimer acid-13C	103	P	30 - 160
EPA 8321B	Perfluorobutanesulfonate-13C	127	P	30 - 160
EPA 8321B	Perfluorodecanoic acid-13C	57.1	P	30 - 160
EPA 8321B	Perfluorohexanesulfonate-13C	126	P	30 - 160
EPA 8321B	Perfluorohexanoic acid-13C	76.2	P	30 - 160

Lab Sample ID: 2184142
Field Sample ID: FRB

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Hexafluoropropylene oxide dimer acid-13C	138	P	30 - 160
EPA 8321B	Perfluorobutanesulfonate-13C	144	P	30 - 160
EPA 8321B	Perfluorodecanoic acid-13C	98.6	P	30 - 160
EPA 8321B	Perfluorohexanesulfonate-13C	151	P	30 - 160
EPA 8321B	Perfluorohexanoic acid-13C	126	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A100060

Included Lab Sample IDs: 2184130, 2184131, 2184132, 2184133, 2184134, 2184135, 2184136, 2184137, 2184138, 2184139, 2184140, 2184141, 2184142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
4:2 Fluorotelomer sulfonate (4:2 FTS)	107	88.4	P/P	60 - 160
4:2 Fluorotelomer sulfonate (4:2 FTS)	93.6	110	P/P	60 - 160
4:2 Fluorotelomer sulfonate (4:2 FTS)	96.0	93.6	P/P	60 - 160
4:2 Fluorotelomer sulfonate (4:2 FTS)	99.3	96.0	P/P	60 - 160
6:2 Fluorotelomer sulfonate (6:2 FTS)	106	106	P/P	60 - 160
6:2 Fluorotelomer sulfonate (6:2 FTS)	106	85.0	P/P	60 - 160
6:2 Fluorotelomer sulfonate (6:2 FTS)	85.0	98.2	P/P	60 - 160
6:2 Fluorotelomer sulfonate (6:2 FTS)	96.5	92.5	P/P	60 - 160
8:2 Fluorotelomer sulfonate (8:2 FTS)	108	89.5	P/P	60 - 160
8:2 Fluorotelomer sulfonate (8:2 FTS)	126	114	P/P	60 - 160
8:2 Fluorotelomer sulfonate (8:2 FTS)	158	124	P/P	60 - 160
8:2 Fluorotelomer sulfonate (8:2 FTS)	89.5	158	P/P	60 - 160
Hexafluoropropylene oxide dimer acid	107	98.3	P/P	60 - 160
Hexafluoropropylene oxide dimer acid	88.1	107	P/P	60 - 160
Hexafluoropropylene oxide dimer acid	91.5	99.4	P/P	60 - 160
Hexafluoropropylene oxide dimer acid	95.5	88.1	P/P	60 - 160
N-Et perfluorooctanesulfonamidoAc acid	117	126	P/P	60 - 160
N-Et perfluorooctanesulfonamidoAc acid	129	120	P/P	60 - 160
N-Et perfluorooctanesulfonamidoAc acid	92.2	129	P/P	60 - 160
N-Et perfluorooctanesulfonamidoAc acid	92.8	92.2	P/P	60 - 160
N-Me perfluorooctanesulfonamidoAc acid	125	131	P/P	60 - 160
N-Me perfluorooctanesulfonamidoAc acid	131	121	P/P	60 - 160
N-Me perfluorooctanesulfonamidoAc acid	96.5	97.3	P/P	60 - 160
N-Me perfluorooctanesulfonamidoAc acid	97.3	131	P/P	60 - 160
Perfluorobutanesulfonic acid (PFBS)	102	103	P/P	60 - 160
Perfluorobutanesulfonic acid (PFBS)	103	114	P/P	60 - 160
Perfluorobutanesulfonic acid (PFBS)	109	99.2	P/P	60 - 160
Perfluorobutanesulfonic acid (PFBS)	114	105	P/P	60 - 160
Perfluorodecanesulfonic acid (PFDS)	108	120	P/P	60 - 160
Perfluorodecanesulfonic acid (PFDS)	108	97.8	P/P	60 - 160
Perfluorodecanesulfonic acid (PFDS)	117	107	P/P	60 - 160
Perfluorodecanesulfonic acid (PFDS)	97.8	108	P/P	60 - 160
Perfluorodecanoic acid (PFDA)	80.8	84.4	P/P	60 - 160
Perfluorodecanoic acid (PFDA)	84.4	88.9	P/P	60 - 160
Perfluorodecanoic acid (PFDA)	88.9	87.6	P/P	60 - 160
Perfluorodecanoic acid (PFDA)	89.6	79.8	P/P	60 - 160
Perfluorododecanoic acid (PFDoA)	104	117	P/P	60 - 160
Perfluorododecanoic acid (PFDoA)	117	89.7	P/P	60 - 160
Perfluorododecanoic acid (PFDoA)	89.7	99.4	P/P	60 - 160
Perfluorododecanoic acid (PFDoA)	97.2	87.5	P/P	60 - 160
Perfluoroheptanesulfonic acid (PFHpS)	114	120	P/P	60 - 160
Perfluoroheptanesulfonic acid (PFHpS)	137	117	P/P	60 - 160
Perfluoroheptanesulfonic acid (PFHpS)	91.7	96.2	P/P	60 - 160
Perfluoroheptanesulfonic acid (PFHpS)	96.2	137	P/P	60 - 160
Perfluoroheptanoic acid (PFHpA)	108	117	P/P	60 - 160
Perfluoroheptanoic acid (PFHpA)	115	98.3	P/P	60 - 160
Perfluoroheptanoic acid (PFHpA)	116	110	P/P	60 - 160
Perfluoroheptanoic acid (PFHpA)	117	115	P/P	60 - 160
Perfluorohexanesulfonic acid (PFHxS)	103	106	P/P	60 - 160
Perfluorohexanesulfonic acid (PFHxS)	106	110	P/P	60 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A100060

Included Lab Sample IDs: 2184130, 2184131, 2184132, 2184133, 2184134, 2184135, 2184136, 2184137, 2184138, 2184139, 2184140, 2184141, 2184142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Perfluorohexanesulfonic acid (PFHxS)	110	111	P/P	60 - 160
Perfluorohexanesulfonic acid (PFHxS)	113	102	P/P	60 - 160
Perfluorohexanoic acid (PFHxA)	111	88.6	P/P	60 - 160
Perfluorohexanoic acid (PFHxA)	113	81.9	P/P	60 - 160
Perfluorohexanoic acid (PFHxA)	88.6	90.0	P/P	60 - 160
Perfluorohexanoic acid (PFHxA)	90.0	118	P/P	60 - 160
Perfluorononanesulfonic acid (PFNS)	101	111	P/P	60 - 160
Perfluorononanesulfonic acid (PFNS)	107	96.6	P/P	60 - 160
Perfluorononanesulfonic acid (PFNS)	107	104	P/P	60 - 160
Perfluorononanesulfonic acid (PFNS)	96.6	101	P/P	60 - 160
Perfluorononanoic acid (PFNA)	108	73.1	P/P	60 - 160
Perfluorononanoic acid (PFNA)	119	108	P/P	60 - 160
Perfluorononanoic acid (PFNA)	73.1	97.9	P/P	60 - 160
Perfluorononanoic acid (PFNA)	92.9	77.5	P/P	60 - 160
Perfluorooctanesulfonic acid (PFOS)	105	119	P/P	60 - 160
Perfluorooctanesulfonic acid (PFOS)	119	146	P/P	60 - 160
Perfluorooctanesulfonic acid (PFOS)	145	146	P/P	60 - 160
Perfluorooctanesulfonic acid (PFOS)	146	148	P/P	60 - 160
Perfluorooctanoic acid (PFOA)	100	110	P/P	60 - 160
Perfluorooctanoic acid (PFOA)	110	74.0	P/P	60 - 160
Perfluorooctanoic acid (PFOA)	74.0	83.0	P/P	60 - 160
Perfluorooctanoic acid (PFOA)	87.4	71.4	P/P	60 - 160
Perfluoropentanesulfonic acid (PFPeS)	96.8	93.2	P/P	60 - 160
Perfluoropentanesulfonic acid (PFPeS)	97.7	95.1	P/P	60 - 160
Perfluoropentanesulfonic acid (PFPeS)	98.0	99.7	P/P	60 - 160
Perfluoropentanesulfonic acid (PFPeS)	99.7	97.7	P/P	60 - 160
Perfluoropentanoic acid (PFPeA)	110	78.7	P/P	60 - 160
Perfluoropentanoic acid (PFPeA)	114	110	P/P	60 - 160
Perfluoropentanoic acid (PFPeA)	78.7	94.6	P/P	60 - 160
Perfluoropentanoic acid (PFPeA)	87.5	74.9	P/P	60 - 160
Perfluorotetradecanoic acid (PFTeA)	103	98.3	P/P	60 - 160
Perfluorotetradecanoic acid (PFTeA)	105	122	P/P	60 - 160
Perfluorotetradecanoic acid (PFTeA)	114	91.5	P/P	60 - 160
Perfluorotetradecanoic acid (PFTeA)	122	103	P/P	60 - 160
Perfluorotridecanoic acid (PFTriA)	102	90.0	P/P	60 - 160
Perfluorotridecanoic acid (PFTriA)	75.6	81.1	P/P	60 - 160
Perfluorotridecanoic acid (PFTriA)	90.0	75.6	P/P	60 - 160
Perfluorotridecanoic acid (PFTriA)	95.6	69.5	P/P	60 - 160
Perfluoroundecanoic acid (PFUnA)	78.2	85.3	P/P	60 - 160
Perfluoroundecanoic acid (PFUnA)	85.4	89.2	P/P	60 - 160
Perfluoroundecanoic acid (PFUnA)	90.1	78.2	P/P	60 - 160
Perfluoroundecanoic acid (PFUnA)	99.4	90.1	P/P	60 - 160

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision SMP	MS
			LCS			
EPA 8321B	4:2 Fluorotelomer sulfonate (4:2 FTS)	105	156	135		14.4
	6:2 Fluorotelomer sulfonate (6:2 FTS)	132	74.0	64.0		14.5
	8:2 Fluorotelomer sulfonate (8:2 FTS)	116	126	116		8.13
	Hexafluoropropylene oxide dimer acid	159	184	182		1.53
	N-Et perfluorooctanesulfonamidoAc acid	121	111	103		7.35
	N-Me perfluorooctanesulfonamidoAc acid	124	133	122		8.73
	Perfluorobutanesulfonic acid (PFBS)	159				4.58
	Perfluorodecanesulfonic acid (PFDS)	121	96.3	89.5		7.34
	Perfluorodecanoic acid (PFDA)	117	105	116		10.1
	Perfluorododecanoic acid (PFDoA)	107	90.0	74.8		18.5
	Perfluoroheptanesulfonic acid (PFHpS)	159	106	120		12.4
	Perfluoroheptanoic acid (PFHpA)	131	132	147		8.28
	Perfluorohexanesulfonic acid (PFHxS)	145				2.56
	Perfluorohexanoic acid (PFHxA)	108				16.9
	Perfluorononanesulfonic acid (PFNS)	132	115	108		5.99
	Perfluorononanoic acid (PFNA)	142	122	122		0.200
	Perfluorooctanesulfonic acid (PFOS)	148				7.33
	Perfluorooctanoic acid (PFOA)	131	129	97.8		17.0
	Perfluoropentanesulfonic acid (PFPeS)	135	138	133		2.79
	Perfluoropentanoic acid (PFPeA)	97.9				3.92
	Perfluorotetradecanoic acid (PFTeA)	86.0	90.4	76.6		16.6
	Perfluorotridecanoic acid (PFTriA)	79.4	61.5	67.5		9.25
	Perfluoroundecanoic acid (PFUnA)	108	86.5	94.4		8.79

Reference Method Descriptions

Method	Description	Associated Samples
EPA 8321B	Perfluorinated alkyl substances in water matrices by HPLC/MS/MS	2184130, 2184131, 2184132, 2184133, 2184134, 2184135, 2184136, 2184137, 2184138, 2184139, 2184140, 2184141, 2184142

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	07/17/2020	07/23/2020 10:00	Pramila Ghimire	07/23/2020 21:02	Pramila Ghimire	2184142
	07/17/2020	07/23/2020 10:00	Pramila Ghimire	07/23/2020 23:59	Pramila Ghimire	2184130
	07/17/2020	07/23/2020 10:00	Pramila Ghimire	07/24/2020 00:18	Pramila Ghimire	2184131
	07/17/2020	07/23/2020 10:00	Pramila Ghimire	07/24/2020 00:38	Pramila Ghimire	2184132
	07/17/2020	07/23/2020 10:00	Pramila Ghimire	07/24/2020 00:58	Pramila Ghimire	2184133
	07/17/2020	07/23/2020 10:00	Pramila Ghimire	07/24/2020 01:17	Pramila Ghimire	2184134
	07/17/2020	07/23/2020 10:00	Pramila Ghimire	07/24/2020 01:37	Pramila Ghimire	2184135
	07/17/2020	07/23/2020 10:00	Pramila Ghimire	07/24/2020 01:57	Pramila Ghimire	2184136
	07/17/2020	07/23/2020 10:00	Pramila Ghimire	07/24/2020 02:36	Pramila Ghimire	2184137
	07/17/2020	07/23/2020 10:00	Pramila Ghimire	07/24/2020 03:35	Pramila Ghimire	2184140
	07/17/2020	07/23/2020 10:00	Pramila Ghimire	07/24/2020 03:55	Pramila Ghimire	2184141
	07/17/2020	07/23/2020 10:00	Pramila Ghimire	07/24/2020 11:05	Pramila Ghimire	2184138
	07/17/2020	07/23/2020 10:00	Pramila Ghimire	07/24/2020 11:24	Pramila Ghimire	2184139