

Your P.O. #: NLAB 16020842
 Your Project #: EIELSON AFB, ALASKA
 Site Location: PFOS/PFOA ANALYSIS
 Your C.O.C. #: 542224-01-01

Attention: Michael Wantland

Bureau Veritas North America, Inc.
 22345 Roethel Dr.
 Novi, MI
 USA 48375

Report Date: 2016/02/18
 Report #: R3899612
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B631447

Received: 2016/02/16, 15:08

Sample Matrix: Water
 # Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	1	2016/02/17	2016/02/18	CAM SOP-00894	EPA 537 m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
 Melissa DiGrazia, Project Manager - ATUT
 Email: MDiGrazia@maxxam.ca
 Phone# (905) 817-5700

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 Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

RESULTS OF ANALYSES OF WATER

Maxxam ID		BWB921			
Sampling Date		2016/02/14 17:10			
COC Number		542224-01-01			
	UNITS	GP16-024/WELL A BLDG3408	RDL	MDL	QC Batch
Miscellaneous Parameters					
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.059	0.020	0.0053	4384307
Perfluorooctane Sulfonate (PFOS)	ug/L	0.17	0.020	0.0033	4384307
Surrogate Recovery (%)					
13C4-Perfluorooctanesulfonate	%	78			4384307
13C4-Perfluorooctanoic acid	%	77			4384307
13C8-Perfluorooctanesulfonamide	%	73			4384307
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					

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Client Project #: EIELSON AFB, ALASKA
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TEST SUMMARY

Maxxam ID: BWB921
Sample ID: GP16-024/WELL A BLDG3408
Matrix: Water

Collected: 2016/02/14
Shipped:
Received: 2016/02/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4384307	2016/02/17	2016/02/18	Colm McNamara

GENERAL COMMENTS

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4384307	CM5	Matrix Spike	13C4-Perfluorooctanesulfonate	2016/02/18		45 (1)	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/02/18		34 (1)	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/02/18		71	%	60 - 120
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/18		140 (2)	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/18		NC	%	70 - 130
4384307	CM5	Spiked Blank	13C4-Perfluorooctanesulfonate	2016/02/18		81	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/02/18		89	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/02/18		76	%	60 - 120
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/18		122	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/18		127	%	70 - 130
4384307	CM5	Method Blank	13C4-Perfluorooctanesulfonate	2016/02/18		100	%	70 - 130
			13C4-Perfluorooctanoic acid	2016/02/18		89	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2016/02/18		83	%	60 - 120
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/18	<0.0053	ug/L		
			Perfluorooctane Sulfonate (PFOS)	2016/02/18	<0.0033	ug/L		
4384307	CM5	RPD - Sample/Sample Dup	Perfluoro-n-Octanoic Acid (PFOA)	2016/02/18	7.1		%	30

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

(1) Surrogate recovery was below the defined lower control limit (LCL). Laboratory spiked water resulted in satisfactory recovery of the surrogate. When considered together, these QC data suggest that matrix interferences may be biasing the data low. Because quantitation is performed using isotope dilution techniques, any losses of the native compound that may occur during any of the sample preparation, extraction, cleanup or determinative steps will be mirrored by a similar loss of the labeled standard, and as such can be accounted for and corrected. Therefore, the quantification of these target compounds is not affected by the low surrogate recovery.

(2) Recovery of the matrix spike was above the upper control limit. Laboratory spiked water resulted in satisfactory recovery of the compound of interest. When considered together, these QC data suggest that matrix interferences may be biasing the data high. For results that were not detected (ND), this potential bias has no impact.

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Sin Chii Chia, Scientific Services

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