



**Groundwater Sample Results,  
Electronic Data Deliverable, Data Validation Report,  
Sample Location Report, SDG C0G5477**

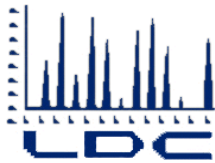
*NS  
Treasure Island, CA*

April 2021









## LABORATORY DATA CONSULTANTS, INC.

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NOREAS, Inc.  
16501 Scientific Way  
Irvine, CA 92618  
ATTN: Ms. Sevda Aleckson  
[Sevda.Aleckson@noreasinc.com](mailto:Sevda.Aleckson@noreasinc.com)

September 8, 2020

SUBJECT: Treasure Island, IR Site 6, Data Validation

Dear Ms. Aleckson,

Enclosed is the final validation report for the fraction listed below. This SDG was received on July 30, 2020. Attachment 1 is a summary of the samples that were reviewed for analysis.

### **LDC Project #48757:**

#### **SDG #**

20F214/C0G5477

#### **Fraction:**

Perfluoroalkyl & Polyfluoroalkyl Substances

The data validation was performed under Level IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- Final Sampling and Analysis Plan, Field Sampling Plan and Quality Assurance Project Plan, Basewide Groundwater and Soil Gas Monitoring at Installation Restoration Sites 6, 12, 21, and 24, Former Naval Station Treasure Island, San Francisco, California; April 2017
- U.S. Department of Defense Quality Systems Manual for Environmental Laboratories, Version 5.3; 2019
- USEPA National Functional Guidelines for Superfund Organic Methods Data Review; August 2014
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng  
[pgeng@lab-data.com](mailto:pgeng@lab-data.com)  
Project Manager/Senior Chemist



## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Treasure Island, IR Site 6

**LDC Report Date:** September 3, 2020

**Parameters:** Perfluoroalkyl & Polyfluoroalkyl Substances

**Validation Level:** Level IV

**Laboratory:** EMAX Laboratories, Inc./Bureau Veritas Canada, Inc.

**Sample Delivery Group (SDG):** 20F214/C0G5477

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
06-MW25-0620	20F214-01/NAH700	Water	06/22/20
06-MW26-0620	20F214-02/NAH701	Water	06/22/20
06-MW30-0620	20F214-03/NAH702	Water	06/22/20
06-MW31-0620	20F214-04/NAH703	Water	06/22/20
06-MW31-0620 DUP	20F214-05/NAH705	Water	06/22/20
06-MW32-0620	20F214-06/NAH706	Water	06/22/20
06-MW33-0620	20F214-07/NAH707	Water	06/22/20
06-MW34-0620	20F214-08/NAH708	Water	06/22/20
06-MW35-0620	20F214-09/NAH709	Water	06/22/20
06-MW36-0620	20F214-10/NAH710	Water	06/22/20
QCFB-0620	20F214-11/NAH711	Water	06/22/20
06-MW30-0620MS	20F214-03/NAH702MS	Water	06/22/20
06-MW30-0620MSD	20F214-03/NAH702MSD	Water	06/22/20

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan), Basewide Groundwater and Soil Gas Monitoring at Installation Restoration Sites 6, 12, 21, and 24, Former Naval Station Treasure Island, San Francisco, California (April 2017), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.3 (2019), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) by Environmental Protection Agency (EPA) Method 537 Modified and LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

All sample results were subjected to Level IV data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.



The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## Qualification Codes

- 1 Holding Times Exceeded
- 2 Sample Preservation / Cooler Temperature Exceeded Acceptance Criteria
- 3 Sample Custody Potentially Compromised Sample Integrity
- 4 Missing/Incomplete Deliverables
- 5 Calibration Did Not Meet Method Criteria
- 6 Equipment/Field Blank Contamination
- 7 Laboratory Method or Calibration Blank Contamination
- 8 Matrix Spike % Recovery Exceeded Acceptance Criteria
- 9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis) Exceeded Acceptance Criteria
- 10A Laboratory Control Sample % Recovery Exceeded Acceptance Criteria
- 10B Laboratory Control Sample Duplicate (RPD) Exceeded Acceptance Criteria
- 11 ICP Interference Check Analysis Exceeded Method Criteria
- 12 RPD Between Two Columns (Pesticides/PCBs only)
- 13 Surrogate Recoveries Exceeded Acceptance Criteria
- 14 Field Duplicates RPD Exceeded Project Criteria
- 15 Peak Resolution did not meet method criteria
- 16 Serial Dilution Analysis Exceeded Method Criteria
- 17 Chemical Recoveries Exceeded Acceptance Criteria
- 18 Trip Blank Contamination
- 19 Internal Standards Did Not Meet Method Criteria
- 20 Calibration Range exceeded Method Criteria
- 21 Potential False Positives
- 22 Do not use, other result more technically sound (overall assessment)
- 23 Estimated Maximum Possible Concentration
- 24 Trace Detection Below the LOQ (RL) and Above the DL (MDL)
- 25 Other

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. LC/MS Instrument Performance Check**

Instrument performance was checked and the requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

Initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination ( $r^2$ ) was greater than or equal to 0.990.

For each calibration standard, all compounds were within 70-130% of their true value.

The signal to noise (S/N) ratio was within validation criteria for all compounds.

Retention time windows were established as required by the method.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

## **IV. Continuing Calibration**

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

The percent differences (%D) of the instrument sensitivity check (ISC) were less than or equal to 30.0% for all compounds.

The signal to noise (S/N) ratio was within validation criteria for all compounds.

Retention times of all compounds in the calibration standards were within the established retention time windows.

All compound concentrations were at the limit of quantitation (LOQ) for the ISC standard.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## VI. Field Blanks

Sample QCFB-0620 was identified as a field blank. No contaminants were found.

## VII. Surrogates

Surrogates were added to all samples as required by the methods. All surrogate recoveries (%R) were within QC limits.

## VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

## X. Field Duplicates

Samples 06-MW31-0620 and 06-MW31-0620 DUP were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD (Limits)	Flag	A or P
	06-MW31-0620	06-MW31-0620 DUP			
Perfluorohexanoic acid (PFHxA)	1.1	1.1	0 (≤30)	-	-
Perfluoroheptanoic acid (PFHpA)	0.51	0.54	6 (≤30)	-	-
Perfluorooctanoic acid (PFOA)	0.38	0.39	3 (≤30)	-	-
Perfluorononanoic acid (PFNA)	0.049	0.051	4 (≤30)	-	-
Perfluorodecanoic acid (PFDA)	0.010	0.011	10 (≤30)	-	-
Perfluorobutane sulfonate (PFBS)	0.12	0.14	15 (≤30)	-	-
Perfluorohexane sulfonate (PFHxS)	4.1	4.1	0 (≤30)	-	-
Perfluorooctane sulfonate (PFOS)	1.9	1.4	30 (≤30)	-	-

## **XI. Labeled Compounds**

All percent recoveries (%R) for labeled compounds used to quantitate target compounds were within QC limits.

## **XII. Compound Quantitation**

All compound quantitations met validation criteria.

## **XIII. Target Compound Identifications**

All target compound identifications met validation criteria.

## **XIV. System Performance**

The system performance was acceptable.

## **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method, DoD QSM version 5.3 and project SAP. This review also included verification of analytes, methods, reporting limits, instrument performance and method QC acceptance limits, which were found to be compliant with the project documents. No results were rejected.

The quality control criteria reviewed were met and are considered acceptable.

**Treasure Island, IR Site 6  
Perfluoroalkyl & Polyfluoroalkyl Substances - Data Qualification Summary - SDG  
20F214/C0G5477**

No Sample Data Qualified in this SDG

**Treasure Island, IR Site 6  
Perfluoroalkyl & Polyfluoroalkyl Substances - Laboratory Blank Data Qualification  
Summary - SDG 20F214/C0G5477**

No Sample Data Qualified in this SDG

**Treasure Island, IR Site 6  
Perfluoroalkyl & Polyfluoroalkyl Substances - Field Blank Data Qualification  
Summary - SDG 20F214/C0G5477**

No Sample Data Qualified in this SDG

LDC #: 48757A96

**VALIDATION COMPLETENESS WORKSHEET**

Date: 9/2/20

SDG #: 20F214/C0G5477

Level IV Stage 4

Page: 1 of 1

Laboratory: EMAX Laboratories, Inc./Bureau Veritas Canada, Inc.

Reviewer: [Signature]  
2nd Reviewer: [Signature]

**METHOD:** LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537M) / DOP & QM 5.3 Table B-15

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	LC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	M <sup>2</sup> TV/ICV ≈ 30
IV.	Continuing calibration/ISC	A/A	D ≈ 30
V.	Laboratory Blanks	A	
V.I	Field blanks	ND	FB = 11
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS
IX.	Field duplicates	SW	D = 4 + 5
X.	Labeled Compounds	A	
XI.	Compound quantitation RL/LOQ/LODs	A	
XII.	Target compound identification	A	
XIII.	System performance	A	
XIV.	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Sub Lab ID	Lab ID	Matrix	Date
1	06-MW25-0620	NAH 700	20F214-01	Water	06/22/20
2	06-MW26-0620	01	20F214-02	Water	06/22/20
3	06-MW30-0620	02	20F214-03	Water	06/22/20
4	06-MW31-0620	03	20F214-04	Water	06/22/20
5	06-MW31-0620 DUP	05	20F214-05	Water	06/22/20
6	06-MW32-0620	06	20F214-06	Water	06/22/20
7	06-MW33-0620	07	20F214-07	Water	06/22/20
8	06-MW34-0620	08	20F214-08	Water	06/22/20
9	06-MW35-0620	09	20F214-09	Water	06/22/20
10	06-MW36-0620	10	20F214-10	Water	06/22/20
11	QCFB-0620	11	20F214-11	Water	06/22/20
12	06-MW30-0620MS	02MS	20F214-03MS	Water	06/22/20
13	06-MW30-0620MSD	02MSD	20F214-03MSD	Water	06/22/20
14					
15					

6819936

**Method:** LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	/			
Were cooler temperature criteria met?	/			
<b>II. LC/MS Instrument performance check</b>				
Were the instrument performance reviewed and found to be within the validation criteria?	/			
<b>III. Initial calibration and Initial calibration verification</b>				
Did the laboratory perform a 5-point calibration prior to sample analysis?	/			
Were all percent relative standard deviations (%RSD) $\leq$ 20%?			/	
Was a curve fit used for evaluation? If yes, did the initial calibration meet the coefficient of determination ( $r^2$ ) criteria of $\geq$ 0.990?	/			
Were all analytes within 70-130% or percent differences (%D) $\leq$ 30% of their true value for each calibration standard?	/			
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	/			
Were the retention time windows properly established?	/			
Was an initial calibration verification (ICV) standard analyzed after each initial calibration for each instrument?	/			
Were all ICV percent differences (%D) of the initial calibration verification $\leq$ 30%?	/			
<b>IV. Continuing calibration and Instrument sensitivity check</b>				
Was a continuing calibration analyzed prior to sample analysis, after every 10 samples and at the end of the analytical sequence?	/			
Were all percent differences (%D) of the continuing calibration $\leq$ 30%?	/			
Were all the retention times within the acceptance windows?	/			
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	/			
Were all percent differences (%D) of the Instrument Sensitivity Check $\leq$ 30%?	/			
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	/			
Was a laboratory blank analyzed for each matrix and concentration?	/			
Was there contamination in the laboratory blanks?		/		
<b>VI. Field blanks</b>				
Were field blanks identified in this SDG?	/			
Were target compounds detected in the field blanks?		/		



Validation Area	Yes	No	NA	Findings/Comments
<b>VII. Matrix spike/Matrix spike duplicates</b>				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	/			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	/			
<b>VIII. Laboratory control samples</b>				
Was an LCS analyzed per extraction batch for this SDG?	/			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	/			
<b>IX. Field duplicates</b>				
Were field duplicate pairs identified in this SDG?	/			
Were target compounds detected in the field duplicates?	/			
<b>X. Labeled compounds</b>				
Were labeled compound percent recoveries (%R) within the QC limits?	/			
Were retention times within 0.4 minutes of the associated calibration standard?	/			
<b>XI. Compound quantitation</b>				
Did the laboratory reporting limits (i.e. DL, LOD, LOQ) meet the QAPP?	/			
Did reported results include both branched and linear isomers?	/			
Were the correct ion transition, labeled compound and relative response factor (RRF) used to quantitate the compound?	/			
Were compound retention times within 0.1 minutes of the associated labeled compound for compounds with a labeled analog?	/			
Were compound quantitation and reporting limits adjusted to reflect all sample dilutions and dry weight factors applicable to Stage 4 validation?	/			
<b>XII. Target compound identification</b>				
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	/			
Were two transitions and the ion transition ratio per analyte monitored and documented with the exception of PFBA and PFPeA?	/			
Were ion ratios between 50-150%?	/			
<b>XIII. System performance</b>				
System performance was found to be acceptable.	/			
<b>XIV. Overall assessment of Data</b>				
Overall assessment of data was found to be acceptable.	/			

## TARGET COMPOUND WORKSHEET

### METHOD: PFAS

A. Perfluorohexanoic acid (PFHxA)			
B. Perfluoroheptanoic acid (PFHpA)			
C. Perfluorooctanoic acid (PFOA)			
D. Perfluorononanoic acid (PFNA)			
E. Perfluorodecanoic acid (PFDA)			
F. Perfluoroundecanoic acid (PFUnA)			
G. Perfluorododecanoic acid (PFDoA)			
H. Perfluorotridecanoic acid (PFTriDA)			
I. Perfluorotetradecanoic acid (PFTeDA)			
J. Perfluorobutanesulfonic acid (PFBS)			
K. Perfluorohexanesulfonic acid (PFHxS)			
L. Perfluoroheptanesulfonic acid (PFHpS)			
M. Perfluorooctanesulfonic acid (PFOS)			
N. Perfluorodecanesulfonic acid (PFDS)			
O. Perfluorooctane Sulfonamide (FOSA)			
P. Perfluorobutanoic acid (PFBA)			
Q. Perfluoropentanoic acid (PFPeA)			
R. 6:2 Fluorotelomer sulfonic acid (6:2 FTS)			
S. 8:2 Fluorotelomer sulfonic acid (8:2 FTS)			
T. N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)			
U. N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)			
V. 1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)			

**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates****Method:** LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

Compound	Concentration (ug/L)		RPD ( $\leq 30$ )	
	4	5		
A	1.1	1.1	0	
B	0.51	0.54	6	
C	0.38	0.39	3	
D	0.049	0.051	4	
E	0.010	0.011	10	
J	0.12	0.14	15	
K	4.1	4.1	0	
M	1.9	1.4	30	

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

**Method:** LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

Calibration Date	Instrument	Analyte	Standard	(Y) Response ratio	(X) Concentration ratio
7/8/2020	LCMS04	PFOA	1	0.14163	0.830
			2	0.50867	3.000
			3	1.48738	8.000
			4	2.95575	16.000
			5	5.65080	30.000
			6	8.24251	41.700

**Linear**

	Calculated	Reported
Constant	-0.097867	-0.033566
X Coefficient(s)	0.19666	0.192788
Correlation Coefficient	0.999439	
Coefficient of Determination (r <sup>2</sup> )	0.998878	1.00000

Calibration Date	Instrument	Analyte	Standard	(Y) Response ratio	(X) Concentration ratio
7/8/2020	LCMS04	PFOS	1	0.12642	0.830
			2	0.46394	3.000
			3	1.26812	8.000
			4	2.52983	16.000
			5	4.92691	30.000
			6	6.99602	41.700

**Linear**

	Calculated	Reported
Constant	-0.064989	-0.019514
X Coefficient(s)	0.16780	0.165060
Correlation Coefficient	0.999766	
Coefficient of Determination (r <sup>2</sup> )	0.999532	1.00000

**VALIDATION FINDINGS WORKSHEET**  
**Continuing Calibration Calculation Verification**

**Method:** LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

$\% \text{ Difference} = 100 * (\text{ave. RRF} - \text{RRF}) / \text{ave. RRF}$   
 $\text{RRF} = (\text{Ax})(\text{Cis}) / (\text{Ais})(\text{Cx})$

Where:

ave. RRF = initial calibration average RRF  
 RRF = continuing calibration RRF  
 Ax = Area of compound

Cx = Concentration of compound,  
 Ais = Area of associated internal standard  
 Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (IS)	True Conc	Reported Conc	Recalculated Conc	Reported %R	Recalculated %R
1	6819936_27	7/8/2020	PFOA (13C4-PFOA)	16.000	15.0630	15.0630	94.1	94.1
			PFOS (13C4-PFOS)	16.000	15.5680	15.5678	97.3	97.3
2	6819936_41	7/8/2020	PFOA (13C4-PFOA)	16.000	15.4530	15.4529	96.6	96.6
			PFOS (13C4-PFOS)	16.000	15.2082	15.2094	95.1	95.1
3			PFOA (13C4-PFOA)					
			PFOS (13C4-PFOS)					

**VALIDATION FINDINGS WORKSHEET**  
**Matrix Spike/Matrix Spike Duplicates Results Verification**

**Method:** LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

SSC = (Area spike) (Conc IS) / (Area IS) (average RRF spike)

%Recovery = 100 \* (SSC - SC)/SA

Where: SSC = Spiked concentration

SC = Sample concentration

SA = Spike added

MS = Matrix spike recovery

MSD = Matrix spike duplicate recovery

RPD = | MS - MSD | \* 2/(MS + MSD)

MS/MSD ID: 12/13

Compound	SA (ug/L)		SC (ug/L)	SSC (ug/L)		MS		MSD		MS/MSD	
	MS	MSD		MS	MSD	Percent Recovery		Percent Recovery		RPD	
			Reported			Recalc.	Reported	Recalc.	Reported	Recalc.	
PFOA	0.4800	0.4800	0.023	0.4867	0.5075	97	97	101	101	4.4	4.2
PFOS	0.4800	0.4800	0.05	0.5272	0.5135	99	99	97	97	2.9	2.6

**VALIDATION FINDINGS WORKSHEET**  
**LCS Results Verification**

**Method:** LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control duplicate were recalculated for the compounds identified below using the following calculation:

$SSC = (\text{Area spike}) (\text{Conc IS}) / (\text{Area IS}) (\text{average RRF spike})$

$\% \text{Recovery} = 100 * SSC/SA$

Where:

SSC = Spiked concentration

LCS = Laboratory control spike recovery

SA = Spike added

LCSD = Laboratory control spike duplicate recovery

$RPD = |LCS - LCSD| * 2 / (LCS + LCSD)$

LCS/LCSD ID: 6819936LCS

Compound	SA (ug/L)		SSC (ug/L)		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
PFOA	0.4800		0.4674		97	97				
PFOS	0.4800		0.4566		95	95				

**VALIDATION FINDINGS WORKSHEET**  
**Sample Results Verification**

**Method:** LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

Compound results for all Level IV samples reported with a positive detect were recalculated and verified using the following equation:

$$\text{Concentration} = \frac{(Ax) (Vo) (Df)}{(RRF) (Wt) (\%S)}$$

Where:

- Ax = Area or height of the peak for the compound to be measured
- Ais = Area or height of the peak for the internal standard
- Cis = Concentration of the internal standard
- DF = Dilution factor
- Vt = Volume of extract in milliliters (mL)
- RRF = Average relative response factor
- Vo = Volume of sample in milliliters (mL)
- Wt = Weight of sample in grams (g)

Sample #	Compound	Ax	Ais	Cis	DF	RRF	Vt (mL)	Vo (mL)	%S	Calculated Concentration (ug/L)	Reported Concentration (ug/L)	% Diff
1	PFOA	38298	13203	100	5		3	125		1.8	1.8	0
			y = mx + b									
			m	0.192788								
			b	-0.033566								



INSTALLATION_ID	SITE_NAME	LOCATION_NAME	LOCATION_TYPE_DESC	COORD_X	COORD_Y	SAMPLE_NAME	SAMPLE_MATRIX_DESC	COLLECT_DATE	ANALYTICAL_METHOD_GRP_DESC	SDG
TREASURE_ISLAND_NS	SITE 00006	06-MW36	Monitoring well	6021419.54	2130435.329	06-MW36-0620	Ground water	24-Jun-20	Perfluoroalkyl Compounds	COG5477
TREASURE_ISLAND_NS	SITE 00006	06-MW34	Monitoring well	6021397.778	2130405.903	06-MW34-0620	Ground water	23-Jun-20	Perfluoroalkyl Compounds	COG5477
TREASURE_ISLAND_NS	SITE 00006	06-MW25	Monitoring well	6021163.016	2130486.964	06-MW25-0620	Ground water	24-Jun-20	Perfluoroalkyl Compounds	COG5477
TREASURE_ISLAND_NS	SITE 00006	06-MW26	Monitoring well	6021172.738	2130574.156	06-MW26-0620	Ground water	24-Jun-20	Perfluoroalkyl Compounds	COG5477
TREASURE_ISLAND_NS	SITE 00006	06-MW31	Monitoring well	6021354.143	2130342.49	06-MW31-0620 DUP	Ground water	24-Jun-20	Perfluoroalkyl Compounds	COG5477
TREASURE_ISLAND_NS	SITE 00006	06-MW35	Monitoring well	6021434.084	2130622.196	06-MW35-0620	Ground water	23-Jun-20	Perfluoroalkyl Compounds	COG5477
TREASURE_ISLAND_NS						QCFB-0620	Water for QC samples	24-Jun-20	Perfluoroalkyl Compounds	COG5477
TREASURE_ISLAND_NS	SITE 00006	06-MW33	Monitoring well	6021270.898	2130694.212	06-MW33-0620	Ground water	23-Jun-20	Perfluoroalkyl Compounds	COG5477
TREASURE_ISLAND_NS	SITE 00006	06-MW31	Monitoring well	6021354.143	2130342.49	06-MW31-0620	Ground water	24-Jun-20	Perfluoroalkyl Compounds	COG5477
TREASURE_ISLAND_NS	SITE 00006	06-MW30	Monitoring well	6021128.148	2130373.461	06-MW30-0620	Ground water	24-Jun-20	Perfluoroalkyl Compounds	COG5477
TREASURE_ISLAND_NS	SITE 00006	06-MW32	Monitoring well	6021196.627	2130516.559	06-MW32-0620	Ground water	24-Jun-20	Perfluoroalkyl Compounds	COG5477