



01-Nov-2019

Natalie Steiner
XTO Energy
21459 CR5
Rifle, CO 81650

Re: **YCF 3-45-1**

Work Order: **19101949**

Dear Natalie,

ALS Environmental received 8 samples on 24-Oct-2019 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 31.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

A handwritten signature in black ink, appearing to read "Chad Whelton".

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Report of Laboratory Analysis

Certificate No: MN 026-999-449

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental 

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RIGHT SOLUTIONS RIGHT PARTNER

Client: XTO Energy
Project: YCF 3-45-1
Work Order: 19101949

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
19101949-01	S. Sidewall	Soil		10/22/2019 09:00	10/24/2019 09:30	<input type="checkbox"/>
19101949-02	E. Sidewall	Soil		10/22/2019 09:00	10/24/2019 09:30	<input type="checkbox"/>
19101949-03	W. Sidewall	Soil		10/22/2019 09:00	10/24/2019 09:30	<input type="checkbox"/>
19101949-04	Bottom #1	Soil		10/22/2019 09:00	10/24/2019 09:30	<input type="checkbox"/>
19101949-05	Bottom #2	Soil		10/22/2019 09:00	10/24/2019 09:30	<input type="checkbox"/>
19101949-06	Access Rd. #8	Soil		10/22/2019 09:00	10/24/2019 09:30	<input type="checkbox"/>
19101949-07	Access Rd. #7	Soil		10/22/2019 09:00	10/24/2019 09:30	<input type="checkbox"/>
19101949-08	Sed Trap #6	Soil		10/22/2019 09:00	10/24/2019 09:30	<input type="checkbox"/>

Client: XTO Energy**Project:** YCF 3-45-1**Work Order:** 19101949**Case Narrative**

Batch 144634, Method GRO_8015_S, Samples 19101949-04A and -05A: GRO surrogate recoveries high due to matrix interference.

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
% of sample	Percent of Sample
°C	Degrees Celcius
µg/Kg-dry	Micrograms per Kilogram Dry Weight
mg/Kg	Milligrams per Kilogram
mg/Kg-dry	Milligrams per Kilogram Dry Weight
mg/L	Milligrams per Liter
mmhos/cm @25°C	Millimhos-Centimeter at 25 Degrees Celcius

none	
s.u.	Standard Units

ALS Group, USA

Date: 01-Nov-19

Client: XTO Energy

Project: YCF 3-45-1

Sample ID: S. Sidewall

Collection Date: 10/22/2019 09:00 AM

Work Order: 19101949

Lab ID: 19101949-01

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 10/29/19		Analyst: KB
DRO (C10-C28)	38		3.5	6.2	mg/Kg-dry	1	10/29/2019 20:38
Surr: 4-Terphenyl-d14	79.6			33-111	%REC	1	10/29/2019 20:38
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 10/25/19		Analyst: KB
GRO (C6-C10)	U		3,200	7,600	µg/Kg-dry	1	10/27/2019 20:37
Surr: Toluene-d8	94.4			71-123	%REC	1	10/27/2019 20:37
MOISTURE							
			Method: SW3550C				Analyst: KTP
Moisture	20		0.10	0.10	% of sample	1	10/24/2019 16:18

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 01-Nov-19

Client: XTO Energy
 Project: YCF 3-45-1
 Sample ID: E. Sidewall
 Collection Date: 10/22/2019 09:00 AM

Work Order: 19101949
 Lab ID: 19101949-02
 Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 10/29/19		Analyst: KB
DRO (C10-C28)	670		3.7	6.6	mg/Kg-dry	1	10/29/2019 21:07
Surr: 4-Terphenyl-d14	72.4			33-111	%REC	1	10/29/2019 21:07
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 10/25/19		Analyst: KB
GRO (C6-C10)	23,000		3,700	8,900	µg/Kg-dry	1	10/27/2019 21:37
Surr: Toluene-d8	99.2			71-123	%REC	1	10/27/2019 21:37
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260C		Prep: SW5035 / 10/25/19		Analyst: JNS
Benzene	U		9.1	53	µg/Kg-dry	1	10/31/2019 23:50
Ethylbenzene	U		11	53	µg/Kg-dry	1	10/31/2019 23:50
m,p-Xylene	U		71	110	µg/Kg-dry	1	10/31/2019 23:50
o-Xylene	U		21	53	µg/Kg-dry	1	10/31/2019 23:50
Toluene	U		15	53	µg/Kg-dry	1	10/31/2019 23:50
Xylenes, Total	U		71	160	µg/Kg-dry	1	10/31/2019 23:50
Surr: 1,2-Dichloroethane-d4	91.8			70-130	%REC	1	10/31/2019 23:50
Surr: 4-Bromofluorobenzene	96.9			70-130	%REC	1	10/31/2019 23:50
Surr: Dibromofluoromethane	89.5			70-130	%REC	1	10/31/2019 23:50
Surr: Toluene-d8	95.8			70-130	%REC	1	10/31/2019 23:50
MOISTURE							
			Method: SW3550C				Analyst: KTP
Moisture	26		0.10	0.10	% of sample	1	10/24/2019 16:18

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 01-Nov-19

Client: XTO Energy

Project: YCF 3-45-1

Sample ID: W. Sidewall

Collection Date: 10/22/2019 09:00 AM

Work Order: 19101949

Lab ID: 19101949-03

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 10/29/19		Analyst: KB
DRO (C10-C28)	410		3.8	6.6	mg/Kg-dry	1	10/29/2019 21:36
Surr: 4-Terphenyl-d14	77.3			33-111	%REC	1	10/29/2019 21:36
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 10/25/19		Analyst: KB
GRO (C6-C10)	81,000		3,700	8,800	µg/Kg-dry	1	10/27/2019 22:07
Surr: Toluene-d8	105			71-123	%REC	1	10/27/2019 22:07
MOISTURE							
			Method: SW3550C				Analyst: KTP
Moisture	25		0.10	0.10	% of sample	1	10/24/2019 16:18

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 01-Nov-19

Client: XTO Energy

Project: YCF 3-45-1

Sample ID: Bottom #1

Collection Date: 10/22/2019 09:00 AM

Work Order: 19101949

Lab ID: 19101949-04

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 10/29/19		Analyst: KB
DRO (C10-C28)	1,300		3.5	6.1	mg/Kg-dry	1	10/29/2019 22:05
Surr: 4-Terphenyl-d14	78.0			33-111	%REC	1	10/29/2019 22:05
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 10/25/19		Analyst: KB
GRO (C6-C10)	700,000		3,000	7,200	µg/Kg-dry	1	10/27/2019 22:36
Surr: Toluene-d8	144	S		71-123	%REC	1	10/27/2019 22:36
MOISTURE							
			Method: SW3550C				Analyst: KTP
Moisture	19		0.10	0.10	% of sample	1	10/24/2019 16:18

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 01-Nov-19

Client: XTO Energy
 Project: YCF 3-45-1
 Sample ID: Bottom #2
 Collection Date: 10/22/2019 09:00 AM

Work Order: 19101949
 Lab ID: 19101949-05
 Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 10/29/19		Analyst: KB
DRO (C10-C28)	790		3.6	6.2	mg/Kg-dry	1	10/29/2019 23:04
Surr: 4-Terphenyl-d14	75.6			33-111	%REC	1	10/29/2019 23:04
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 10/25/19		Analyst: KB
GRO (C6-C10)	400,000		3,500	8,300	µg/Kg-dry	1	10/27/2019 23:06
Surr: Toluene-d8	124	S		71-123	%REC	1	10/27/2019 23:06
MOISTURE							
			Method: SW3550C				Analyst: KTP
Moisture	22		0.10	0.10	% of sample	1	10/28/2019 10:55

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 01-Nov-19

Client: XTO Energy
Project: YCF 3-45-1
Sample ID: Access Rd. #8
Collection Date: 10/22/2019 09:00 AM

Work Order: 19101949
Lab ID: 19101949-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 10/29/19		Analyst: KB
DRO (C10-C28)	180		3.4	6.0	mg/Kg-dry	1	10/29/2019 23:33
Surr: 4-Terphenyl-d14	59.9			33-111	%REC	1	10/29/2019 23:33
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 10/25/19		Analyst: KB
GRO (C6-C10)	U		3.1	7.4	mg/Kg	1	10/27/2019 23:36
Surr: Toluene-d8	97.0			71-123	%REC	1	10/27/2019 23:36
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 10/29/19		Analyst: RSB
Mercury	0.014	J	0.0021	0.021	mg/Kg-dry	1	10/29/2019 17:18
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 10/30/19		Analyst: STP
Arsenic	3.9		0.058	0.48	mg/Kg-dry	1	10/30/2019 21:57
Barium	200		4.4	4.8	mg/Kg-dry	10	10/31/2019 14:01
Boron	9.2		1.8	1.9	mg/Kg-dry	1	10/30/2019 21:57
Cadmium	0.043	J	0.029	0.19	mg/Kg-dry	1	10/30/2019 21:57
Chromium	35		2.1	4.8	mg/Kg-dry	10	10/31/2019 14:01
Copper	6.2		0.48	0.48	mg/Kg-dry	1	10/30/2019 21:57
Lead	7.8		0.23	0.48	mg/Kg-dry	1	10/30/2019 21:57
Nickel	14		0.25	0.48	mg/Kg-dry	1	10/30/2019 21:57
Selenium	U		0.44	0.48	mg/Kg-dry	1	10/30/2019 21:57
Silver	U		0.064	0.48	mg/Kg-dry	1	10/30/2019 21:57
Zinc	32		9.5	9.6	mg/Kg-dry	10	10/31/2019 14:01
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 10/30/19		Analyst: STP
Calcium	51		2.5	5.0	mg/L	10	10/30/2019 15:24
Magnesium	3.9		0.50	2.0	mg/L	10	10/30/2019 15:24
Sodium	370		0.45	2.0	mg/L	10	10/30/2019 15:24
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/30/19		Analyst: STP
Sodium Adsorption Ratio	14		0.010	0.010	none	1	10/30/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 10/25/19		Analyst: EEW
Acenaphthene	U		0.97	5.0	µg/Kg-dry	1	10/25/2019 16:31
Anthracene	U		1.7	5.0	µg/Kg-dry	1	10/25/2019 16:31
Benzo(a)anthracene	U		2.1	5.0	µg/Kg-dry	1	10/25/2019 16:31
Benzo(a)pyrene	U		1.4	5.0	µg/Kg-dry	1	10/25/2019 16:31
Benzo(b)fluoranthene	U		1.2	5.0	µg/Kg-dry	1	10/25/2019 16:31
Benzo(k)fluoranthene	U		1.5	5.0	µg/Kg-dry	1	10/25/2019 16:31
Chrysene	U		1.0	5.0	µg/Kg-dry	1	10/25/2019 16:31
Dibenzo(a,h)anthracene	U		1.2	5.0	µg/Kg-dry	1	10/25/2019 16:31

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 01-Nov-19

Client: XTO Energy
Project: YCF 3-45-1
Sample ID: Access Rd. #8
Collection Date: 10/22/2019 09:00 AM

Work Order: 19101949
Lab ID: 19101949-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluoranthene	U		0.92	5.0	µg/Kg-dry	1	10/25/2019 16:31
Fluorene	41		1.7	5.0	µg/Kg-dry	1	10/25/2019 16:31
Indeno(1,2,3-cd)pyrene	U		1.8	5.0	µg/Kg-dry	1	10/25/2019 16:31
Naphthalene	U		2.2	5.0	µg/Kg-dry	1	10/25/2019 16:31
Pyrene	U		0.83	5.0	µg/Kg-dry	1	10/25/2019 16:31
Surr: 2-Fluorobiphenyl	63.9			20-140	%REC	1	10/25/2019 16:31
Surr: 4-Terphenyl-d14	38.3			22-172	%REC	1	10/25/2019 16:31
Surr: Nitrobenzene-d5	62.5			28-140	%REC	1	10/25/2019 16:31
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 10/25/19		Analyst: JNS
Benzene	U		0.0076	0.045	mg/Kg	1	10/31/2019 21:57
Ethylbenzene	U		0.0094	0.045	mg/Kg	1	10/31/2019 21:57
m,p-Xylene	U		0.059	0.089	mg/Kg	1	10/31/2019 21:57
o-Xylene	U		0.017	0.045	mg/Kg	1	10/31/2019 21:57
Toluene	U		0.012	0.045	mg/Kg	1	10/31/2019 21:57
Xylenes, Total	U		0.059	0.13	mg/Kg	1	10/31/2019 21:57
Surr: 1,2-Dichloroethane-d4	91.8			70-130	%REC	1	10/31/2019 21:57
Surr: 4-Bromofluorobenzene	94.8			70-130	%REC	1	10/31/2019 21:57
Surr: Dibromofluoromethane	88.6			70-130	%REC	1	10/31/2019 21:57
Surr: Toluene-d8	96.2			70-130	%REC	1	10/31/2019 21:57
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/30/19		Analyst: QTN
Electrical Conductivity @ Saturation	2.1		0.011	0.10	mmhos/cm @25°	20	10/30/2019 10:18
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: JB
Chromium, Trivalent	35		0.38	1.2	mg/Kg-dry	1	11/1/2019 11:15
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 10/29/19		Analyst: RZM
Chromium, Hexavalent	U		1.0	1.2	mg/Kg-dry	1	10/29/2019 15:55
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	18		0.10	0.10	% of sample	1	10/28/2019 10:55
PH			Method: SW9045D		Prep: EXTRACT / 10/24/19		Analyst: DNW
pH	9.20		0.10	0.100	s.u.	1	10/25/2019 09:00
Temperature	20.8		0.10	0.100	°C	1	10/25/2019 09:00

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 01-Nov-19

Client: XTO Energy
Project: YCF 3-45-1
Sample ID: Access Rd. #7
Collection Date: 10/22/2019 09:00 AM

Work Order: 19101949
Lab ID: 19101949-07
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 10/29/19		Analyst: KB
DRO (C10-C28)	30		3.5	6.1	mg/Kg-dry	1	10/30/2019 12:02
Surr: 4-Terphenyl-d14	72.7			33-111	%REC	1	10/30/2019 12:02
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 10/25/19		Analyst: KB
GRO (C6-C10)	U		3.3	7.9	mg/Kg	1	10/28/2019 12:06
Surr: Toluene-d8	100			71-123	%REC	1	10/28/2019 12:06
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 10/29/19		Analyst: RSB
Mercury	0.013	J	0.0018	0.018	mg/Kg-dry	1	10/29/2019 17:20
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 10/30/19		Analyst: STP
Arsenic	5.4		0.054	0.45	mg/Kg-dry	1	10/30/2019 21:59
Barium	210		4.2	4.5	mg/Kg-dry	10	10/31/2019 14:02
Boron	11		1.7	1.8	mg/Kg-dry	1	10/30/2019 21:59
Cadmium	U		0.027	0.18	mg/Kg-dry	1	10/30/2019 21:59
Chromium	42		2.0	4.5	mg/Kg-dry	10	10/31/2019 14:02
Copper	8.2		0.45	0.45	mg/Kg-dry	1	10/30/2019 21:59
Lead	12		0.22	0.45	mg/Kg-dry	1	10/30/2019 21:59
Nickel	19		2.4	4.5	mg/Kg-dry	10	10/31/2019 14:02
Selenium	U		0.42	0.45	mg/Kg-dry	1	10/30/2019 21:59
Silver	U		0.060	0.45	mg/Kg-dry	1	10/30/2019 21:59
Zinc	42		8.9	9.0	mg/Kg-dry	10	10/31/2019 14:02
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 10/30/19		Analyst: STP
Calcium	46		2.5	5.0	mg/L	10	10/30/2019 15:25
Magnesium	5.9		0.50	2.0	mg/L	10	10/30/2019 15:25
Sodium	350		0.45	2.0	mg/L	10	10/30/2019 15:25
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/30/19		Analyst: STP
Sodium Adsorption Ratio	13		0.010	0.010	none	1	10/30/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 10/25/19		Analyst: EEW
Acenaphthene	U		0.95	4.9	µg/Kg-dry	1	10/25/2019 16:46
Anthracene	U		1.7	4.9	µg/Kg-dry	1	10/25/2019 16:46
Benzo(a)anthracene	U		2.0	4.9	µg/Kg-dry	1	10/25/2019 16:46
Benzo(a)pyrene	U		1.3	4.9	µg/Kg-dry	1	10/25/2019 16:46
Benzo(b)fluoranthene	U		1.2	4.9	µg/Kg-dry	1	10/25/2019 16:46
Benzo(k)fluoranthene	U		1.4	4.9	µg/Kg-dry	1	10/25/2019 16:46
Chrysene	U		1.0	4.9	µg/Kg-dry	1	10/25/2019 16:46
Dibenzo(a,h)anthracene	U		1.2	4.9	µg/Kg-dry	1	10/25/2019 16:46

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 01-Nov-19

Client: XTO Energy
Project: YCF 3-45-1
Sample ID: Access Rd. #7
Collection Date: 10/22/2019 09:00 AM

Work Order: 19101949
Lab ID: 19101949-07
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluoranthene	U		0.91	4.9	µg/Kg-dry	1	10/25/2019 16:46
Fluorene	19		1.6	4.9	µg/Kg-dry	1	10/25/2019 16:46
Indeno(1,2,3-cd)pyrene	U		1.8	4.9	µg/Kg-dry	1	10/25/2019 16:46
Naphthalene	U		2.1	4.9	µg/Kg-dry	1	10/25/2019 16:46
Pyrene	U		0.81	4.9	µg/Kg-dry	1	10/25/2019 16:46
Surr: 2-Fluorobiphenyl	57.2			20-140	%REC	1	10/25/2019 16:46
Surr: 4-Terphenyl-d14	34.3			22-172	%REC	1	10/25/2019 16:46
Surr: Nitrobenzene-d5	54.3			28-140	%REC	1	10/25/2019 16:46
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 10/25/19		Analyst: JNS
Benzene	U		0.0081	0.048	mg/Kg	1	10/31/2019 22:20
Ethylbenzene	U		0.010	0.048	mg/Kg	1	10/31/2019 22:20
m,p-Xylene	U		0.063	0.095	mg/Kg	1	10/31/2019 22:20
o-Xylene	U		0.018	0.048	mg/Kg	1	10/31/2019 22:20
Toluene	U		0.013	0.048	mg/Kg	1	10/31/2019 22:20
Xylenes, Total	U		0.063	0.14	mg/Kg	1	10/31/2019 22:20
Surr: 1,2-Dichloroethane-d4	92.9			70-130	%REC	1	10/31/2019 22:20
Surr: 4-Bromofluorobenzene	94.9			70-130	%REC	1	10/31/2019 22:20
Surr: Dibromofluoromethane	90.0			70-130	%REC	1	10/31/2019 22:20
Surr: Toluene-d8	95.5			70-130	%REC	1	10/31/2019 22:20
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/30/19		Analyst: QTN
Electrical Conductivity @ Saturation	1.9		0.011	0.10	mmhos/cm @25°	20	10/30/2019 10:18
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: JB
Chromium, Trivalent	42		0.38	1.2	mg/Kg-dry	1	11/1/2019 11:15
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 10/29/19		Analyst: RZM
Chromium, Hexavalent	U		1.0	1.2	mg/Kg-dry	1	10/29/2019 15:55
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	18		0.10	0.10	% of sample	1	10/28/2019 10:55
PH			Method: SW9045D		Prep: EXTRACT / 10/24/19		Analyst: DNW
pH	9.35		0.10	0.100	s.u.	1	10/25/2019 09:00
Temperature	20.9		0.10	0.100	°C	1	10/25/2019 09:00

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 01-Nov-19

Client: XTO Energy
Project: YCF 3-45-1
Sample ID: Sed Trap #6
Collection Date: 10/22/2019 09:00 AM

Work Order: 19101949
Lab ID: 19101949-08
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 10/29/19		Analyst: KB
DRO (C10-C28)	16		3.5	6.2	mg/Kg-dry	1	10/30/2019 12:31
Surr: 4-Terphenyl-d14	75.1			33-111	%REC	1	10/30/2019 12:31
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 10/25/19		Analyst: KB
GRO (C6-C10)	U		3.3	8.0	mg/Kg	1	10/28/2019 12:35
Surr: Toluene-d8	100			71-123	%REC	1	10/28/2019 12:35
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 10/29/19		Analyst: RSB
Mercury	0.014	J	0.0020	0.020	mg/Kg-dry	1	10/29/2019 17:28
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 10/30/19		Analyst: STP
Arsenic	3.5		0.060	0.50	mg/Kg-dry	1	10/30/2019 22:04
Barium	210		4.6	5.0	mg/Kg-dry	10	10/31/2019 14:04
Boron	7.2		1.9	2.0	mg/Kg-dry	1	10/30/2019 22:04
Cadmium	0.12	J	0.030	0.20	mg/Kg-dry	1	10/30/2019 22:04
Chromium	37		2.2	5.0	mg/Kg-dry	10	10/31/2019 14:04
Copper	13		0.50	0.50	mg/Kg-dry	1	10/30/2019 22:04
Lead	12		0.24	0.50	mg/Kg-dry	1	10/30/2019 22:04
Nickel	18		0.26	0.50	mg/Kg-dry	1	10/30/2019 22:04
Selenium	U		0.46	0.50	mg/Kg-dry	1	10/30/2019 22:04
Silver	U		0.066	0.50	mg/Kg-dry	1	10/30/2019 22:04
Zinc	48		9.8	10	mg/Kg-dry	10	10/31/2019 14:04
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 10/30/19		Analyst: STP
Calcium	100		2.5	5.0	mg/L	10	10/30/2019 15:27
Magnesium	7.2		0.50	2.0	mg/L	10	10/30/2019 15:27
Sodium	150		0.45	2.0	mg/L	10	10/30/2019 15:27
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/30/19		Analyst: STP
Sodium Adsorption Ratio	3.8		0.010	0.010	none	1	10/30/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 10/25/19		Analyst: EEW
Acenaphthene	U		1.0	5.1	µg/Kg-dry	1	10/25/2019 17:02
Anthracene	U		1.7	5.1	µg/Kg-dry	1	10/25/2019 17:02
Benzo(a)anthracene	U		2.1	5.1	µg/Kg-dry	1	10/25/2019 17:02
Benzo(a)pyrene	U		1.4	5.1	µg/Kg-dry	1	10/25/2019 17:02
Benzo(b)fluoranthene	U		1.2	5.1	µg/Kg-dry	1	10/25/2019 17:02
Benzo(k)fluoranthene	U		1.5	5.1	µg/Kg-dry	1	10/25/2019 17:02
Chrysene	U		1.1	5.1	µg/Kg-dry	1	10/25/2019 17:02
Dibenzo(a,h)anthracene	U		1.2	5.1	µg/Kg-dry	1	10/25/2019 17:02

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 01-Nov-19

Client: XTO Energy
Project: YCF 3-45-1
Sample ID: Sed Trap #6
Collection Date: 10/22/2019 09:00 AM

Work Order: 19101949
Lab ID: 19101949-08
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluoranthene	U		0.95	5.1	µg/Kg-dry	1	10/25/2019 17:02
Fluorene	U		1.7	5.1	µg/Kg-dry	1	10/25/2019 17:02
Indeno(1,2,3-cd)pyrene	U		1.8	5.1	µg/Kg-dry	1	10/25/2019 17:02
Naphthalene	U		2.2	5.1	µg/Kg-dry	1	10/25/2019 17:02
Pyrene	U		0.85	5.1	µg/Kg-dry	1	10/25/2019 17:02
Surr: 2-Fluorobiphenyl	74.5			20-140	%REC	1	10/25/2019 17:02
Surr: 4-Terphenyl-d14	48.1			22-172	%REC	1	10/25/2019 17:02
Surr: Nitrobenzene-d5	74.3			28-140	%REC	1	10/25/2019 17:02
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 10/25/19		Analyst: JNS
Benzene	U		0.0082	0.048	mg/Kg	1	11/1/2019 12:13
Ethylbenzene	U		0.010	0.048	mg/Kg	1	11/1/2019 12:13
m,p-Xylene	U		0.064	0.096	mg/Kg	1	11/1/2019 12:13
o-Xylene	U		0.019	0.048	mg/Kg	1	11/1/2019 12:13
Toluene	U		0.013	0.048	mg/Kg	1	11/1/2019 12:13
Xylenes, Total	U		0.064	0.14	mg/Kg	1	11/1/2019 12:13
Surr: 1,2-Dichloroethane-d4	92.8			70-130	%REC	1	11/1/2019 12:13
Surr: 4-Bromofluorobenzene	94.0			70-130	%REC	1	11/1/2019 12:13
Surr: Dibromofluoromethane	90.3			70-130	%REC	1	11/1/2019 12:13
Surr: Toluene-d8	95.6			70-130	%REC	1	11/1/2019 12:13
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/30/19		Analyst: QTN
Electrical Conductivity @ Saturation	1.3		0.011	0.10	mmhos/cm @25°	20	10/30/2019 10:18
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: JB
Chromium, Trivalent	37		0.38	1.2	mg/Kg-dry	1	11/1/2019 11:15
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 10/29/19		Analyst: RZM
Chromium, Hexavalent	U		1.0	1.2	mg/Kg-dry	1	10/29/2019 15:55
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	20		0.10	0.10	% of sample	1	10/28/2019 10:55
PH			Method: SW9045D		Prep: EXTRACT / 10/24/19		Analyst: DNW
pH	8.47		0.10	0.100	s.u.	1	10/25/2019 09:00
Temperature	20.6		0.10	0.100	°C	1	10/25/2019 09:00

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: XTO Energy
Work Order: 19101949
Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **144777** Instrument ID **GC8** Method: **SW8015M**

MBLK		Sample ID: DBLKS1-144777-144777				Units: mg/Kg		Analysis Date: 10/29/2019 05:43 P		
Client ID:		Run ID: GC8_191029A				SeqNo: 6021405		Prep Date: 10/29/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	U	5.0								
<i>Surr: 4-Terphenyl-d14</i>	2.643	0	3.33	0	79.4	33-111	0			

LCS		Sample ID: DLCSS1-144777-144777				Units: mg/Kg		Analysis Date: 10/29/2019 06:12 P		
Client ID:		Run ID: GC8_191029A				SeqNo: 6021406		Prep Date: 10/29/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	339.2	5.0	333	0	102	58-111	0			
<i>Surr: 4-Terphenyl-d14</i>	2.413	0	3.33	0	72.5	33-111	0			

MS		Sample ID: 19101947-01A MS				Units: mg/Kg		Analysis Date: 10/29/2019 07:10 P		
Client ID:		Run ID: GC8_191029A				SeqNo: 6021408		Prep Date: 10/29/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	478.4	4.9	326.2	168.3	95	58-111	0			
<i>Surr: 4-Terphenyl-d14</i>	6.431	0	3.262	0	197	33-111	0			S

MSD		Sample ID: 19101947-01A MSD				Units: mg/Kg		Analysis Date: 10/29/2019 07:39 P		
Client ID:		Run ID: GC8_191029A				SeqNo: 6021409		Prep Date: 10/29/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	449.6	5.0	331.7	168.3	84.8	58-111	478.4	6.21	30	
<i>Surr: 4-Terphenyl-d14</i>	8.452	0	3.317	0	255	33-111	6.431	27.2	30	S

The following samples were analyzed in this batch:

19101949-01A	19101949-02A	19101949-03A
19101949-04A	19101949-05A	19101949-06A
19101949-07A	19101949-08A	

Client: XTO Energy
 Work Order: 19101949
 Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **144634** Instrument ID **GC10** Method: **SW8015D**

MBLK		Sample ID: MBLK-144634-144634				Units: µg/Kg-dry		Analysis Date: 10/27/2019 12:11 P		
Client ID:		Run ID: GC10_191027A				SeqNo: 6015625		Prep Date: 10/25/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	U	5,000								
Surr: Toluene-d8	5198	0	5000	0	104	71-123	0			

LCS		Sample ID: LCS-144634-144634				Units: µg/Kg-dry		Analysis Date: 10/27/2019 11:11 A		
Client ID:		Run ID: GC10_191027A				SeqNo: 6015623		Prep Date: 10/25/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	441900	5,000	500000	0	88.4	71-123	0			
Surr: Toluene-d8	5400	0	5000	0	108	71-123	0			

MS		Sample ID: 19101947-01A MS				Units: µg/Kg-dry		Analysis Date: 10/28/2019 02:34 A		
Client ID:		Run ID: GC10_191027A				SeqNo: 6015649		Prep Date: 10/25/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	853700	7,000	701600	10470	120	71-123	0			
Surr: Toluene-d8	7749	0	7016	0	110	71-123	0			

MSD		Sample ID: 19101947-01A MSD				Units: µg/Kg-dry		Analysis Date: 10/28/2019 03:04 A		
Client ID:		Run ID: GC10_191027A				SeqNo: 6015650		Prep Date: 10/25/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	829500	7,200	716700	10470	114	71-123	853700	2.87	30	
Surr: Toluene-d8	7729	0	7167	0	108	71-123	7749	0.257	30	

The following samples were analyzed in this batch:

19101949-01A	19101949-02A	19101949-03A
19101949-04A	19101949-05A	19101949-06A
19101949-07A	19101949-08A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: XTO Energy
Work Order: 19101949
Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **144788** Instrument ID **HG4** Method: **SW7471B**

MBLK		Sample ID: MBLK-144788-144788				Units: mg/Kg		Analysis Date: 10/29/2019 04:43 P		
Client ID:		Run ID: HG4_191029A				SeqNo: 6021254		Prep Date: 10/29/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury U 0.020

LCS		Sample ID: LCS-144788-144788				Units: mg/Kg		Analysis Date: 10/29/2019 04:45 P		
Client ID:		Run ID: HG4_191029A				SeqNo: 6021256		Prep Date: 10/29/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1769 0.020 0.1665 0 106 80-120 0

MS		Sample ID: 19101628-01CMS				Units: mg/Kg		Analysis Date: 10/29/2019 04:51 P		
Client ID:		Run ID: HG4_191029A				SeqNo: 6021261		Prep Date: 10/29/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1844 0.017 0.1446 0.04369 97.3 75-125 0

MSD		Sample ID: 19101628-01CMSD				Units: mg/Kg		Analysis Date: 10/29/2019 04:53 P		
Client ID:		Run ID: HG4_191029A				SeqNo: 6021263		Prep Date: 10/29/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1664 0.016 0.1363 0.04369 90.1 75-125 0.1844 10.2 35

The following samples were analyzed in this batch:

19101949-06A	19101949-07A	19101949-08A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: XTO Energy
Work Order: 19101949
Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **144829** Instrument ID **ICPMS3** Method: **SW6020A**

DUP		Sample ID: 19102081-03ADUP				Units: mg/L		Analysis Date: 10/30/2019 03:45 P		
Client ID:		Run ID: ICPMS3_191030A				SeqNo: 6022979		Prep Date: 10/30/2019		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	132.1	5.0	0	0	0	0-0	146.3	10.2		
Magnesium	18.08	2.0	0	0	0	0-0	20.15	10.9		
Sodium	11.94	2.0	0	0	0	0-0	13.33	11		

The following samples were analyzed in this batch:

19101949-06A	19101949-07A	19101949-08A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: XTO Energy
 Work Order: 19101949
 Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **144854** Instrument ID **ICPMS3** Method: **SW6020A**

MBLK		Sample ID: MBLK-144854-144854				Units: mg/Kg		Analysis Date: 10/30/2019 04:38 P		
Client ID:		Run ID: ICPMS3_191030B				SeqNo: 6023330		Prep Date: 10/30/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.25								
Barium	U	0.25								
Boron	U	1.0								
Cadmium	U	0.10								
Chromium	U	0.25								
Copper	U	0.25								
Lead	U	0.25								
Nickel	U	0.25								
Selenium	U	0.25								
Silver	U	0.25								
Zinc	U	0.50								

LCS		Sample ID: LCS-144854-144854				Units: mg/Kg		Analysis Date: 10/30/2019 04:40 P		
Client ID:		Run ID: ICPMS3_191030B				SeqNo: 6023333		Prep Date: 10/30/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.921	0.25	5	0	98.4	80-120	0			
Barium	5.149	0.25	5	0	103	80-120	0			
Boron	24.22	1.0	25	0	96.9	80-120	0			
Cadmium	4.93	0.10	5	0	98.6	80-120	0			
Chromium	5.081	0.25	5	0	102	80-120	0			
Copper	5.018	0.25	5	0	100	80-120	0			
Lead	5.057	0.25	5	0	101	80-120	0			
Nickel	4.948	0.25	5	0	99	80-120	0			
Selenium	4.889	0.25	5	0	97.8	80-120	0			
Silver	5.156	0.25	5	0	103	80-120	0			
Zinc	5.087	0.50	5	0	102	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: XTO Energy
 Work Order: 19101949
 Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **144854** Instrument ID **ICPMS3** Method: **SW6020A**

MS		Sample ID: 19102263-02AMS				Units: mg/Kg		Analysis Date: 10/30/2019 05:09 P		
Client ID:		Run ID: ICPMS3_191030B				SeqNo: 6023377		Prep Date: 10/30/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	17.63	0.40	7.974	9.932	96.6	75-125	0			
Barium	93.35	0.40	7.974	76.82	207	75-125	0			SO
Boron	53.96	1.6	39.87	12.08	105	75-125	0			
Cadmium	7.244	0.16	7.974	0.1414	89.1	75-125	0			
Chromium	21.97	0.40	7.974	12.08	124	75-125	0			
Copper	22.7	0.40	7.974	16.83	73.6	75-125	0			S
Lead	95.29	0.40	7.974	96.5	-15.2	75-125	0			SO
Nickel	20.93	0.40	7.974	11.44	119	75-125	0			
Selenium	7.919	0.40	7.974	0.7239	90.2	75-125	0			
Silver	7.342	0.40	7.974	0.04176	91.5	75-125	0			
Zinc	187.9	0.80	7.974	175.8	152	75-125	0			SEO

MSD		Sample ID: 19102263-02AMSD				Units: mg/Kg		Analysis Date: 10/30/2019 05:10 P		
Client ID:		Run ID: ICPMS3_191030B				SeqNo: 6023379		Prep Date: 10/30/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	17.41	0.41	8.104	9.932	92.2	75-125	17.63	1.31	20	
Barium	93.37	0.41	8.104	76.82	204	75-125	93.35	0.0199	20	SO
Boron	54.16	1.6	40.52	12.08	104	75-125	53.96	0.375	20	
Cadmium	7.256	0.16	8.104	0.1414	87.8	75-125	7.244	0.164	20	
Chromium	21.73	0.41	8.104	12.08	119	75-125	21.97	1.11	20	
Copper	22.35	0.41	8.104	16.83	68.1	75-125	22.7	1.53	20	S
Lead	97.62	0.41	8.104	96.5	13.8	75-125	95.29	2.41	20	SO
Nickel	20.66	0.41	8.104	11.44	114	75-125	20.93	1.28	20	
Selenium	8.229	0.41	8.104	0.7239	92.6	75-125	7.919	3.83	20	
Silver	7.412	0.41	8.104	0.04176	90.9	75-125	7.342	0.945	20	
Zinc	219.9	0.81	8.104	175.8	545	75-125	187.9	15.7	20	SEO

The following samples were analyzed in this batch:

19101949-06A	19101949-07A	19101949-08A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: XTO Energy
Work Order: 19101949
Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **144829** Instrument ID **SAR** Method: **USDA H60 Metho**

DUP		Sample ID: 19102081-03ADUP				Units: none		Analysis Date: 10/30/2019		
Client ID:		Run ID: SAR_191030A				SeqNo: 6023286		Prep Date: 10/30/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium Adsorption Ratio	0.2584	0.010	0	0	0		0.274	5.83	50	

The following samples were analyzed in this batch:

19101949-06A	19101949-07A	19101949-08A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: XTO Energy
 Work Order: 19101949
 Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **144631** Instrument ID **SVMS6** Method: **SW846 8270D**

MBLK		Sample ID: SBLKS1-144631-144631				Units: µg/Kg		Analysis Date: 10/25/2019 02:58 P		
Client ID:		Run ID: SVMS6_191025A				SeqNo: 6013715		Prep Date: 10/25/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	U	4.2								
Anthracene	U	4.2								
Benzo(a)anthracene	U	4.2								
Benzo(a)pyrene	U	4.2								
Benzo(b)fluoranthene	U	4.2								
Benzo(k)fluoranthene	U	4.2								
Chrysene	U	4.2								
Dibenzo(a,h)anthracene	U	4.2								
Fluoranthene	U	4.2								
Fluorene	U	4.2								
Indeno(1,2,3-cd)pyrene	U	4.2								
Naphthalene	U	4.2								
Pyrene	U	4.2								
Surr: 2-Fluorobiphenyl	2694	0	3333	0	80.8	20-140	0			
Surr: 4-Terphenyl-d14	1798	0	3333	0	54	22-172	0			
Surr: Nitrobenzene-d5	2664	0	3333	0	79.9	28-140	0			

LCS		Sample ID: SLCSS1-144631-144631				Units: µg/Kg		Analysis Date: 10/25/2019 03:14 P		
Client ID:		Run ID: SVMS6_191025A				SeqNo: 6013716		Prep Date: 10/25/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	993.3	4.2	1333	0	74.5	40-140	0			
Anthracene	1092	4.2	1333	0	81.9	40-140	0			
Benzo(a)anthracene	1041	4.2	1333	0	78.1	40-140	0			
Benzo(a)pyrene	1106	4.2	1333	0	83	40-140	0			
Benzo(b)fluoranthene	994.3	4.2	1333	0	74.6	40-140	0			
Benzo(k)fluoranthene	960.2	4.2	1333	0	72	40-140	0			
Chrysene	983.3	4.2	1333	0	73.8	40-140	0			
Dibenzo(a,h)anthracene	1373	4.2	1333	0	103	40-140	0			
Fluoranthene	1086	4.2	1333	0	81.5	40-140	0			
Fluorene	1055	4.2	1333	0	79.2	40-140	0			
Indeno(1,2,3-cd)pyrene	1513	4.2	1333	0	113	40-140	0			
Naphthalene	1038	4.2	1333	0	77.8	40-140	0			
Pyrene	805.2	4.2	1333	0	60.4	40-140	0			
Surr: 2-Fluorobiphenyl	2707	0	3333	0	81.2	20-140	0			
Surr: 4-Terphenyl-d14	1703	0	3333	0	51.1	22-172	0			
Surr: Nitrobenzene-d5	2224	0	3333	0	66.7	28-140	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: XTO Energy
 Work Order: 19101949
 Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **144631** Instrument ID **SVMS6** Method: **SW846 8270D**

MS				Sample ID: 19101968-01B MS		Units: µg/Kg		Analysis Date: 10/25/2019 03:45 P		
Client ID:		Run ID: SVMS6_191025A			SeqNo: 6015879		Prep Date: 10/25/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1009	4.0	1277	0	79	40-140	0			
Anthracene	1097	4.0	1277	0	85.9	40-140	0			
Benzo(a)anthracene	1069	4.0	1277	0	83.7	40-140	0			
Benzo(a)pyrene	1146	4.0	1277	0	89.7	40-140	0			
Benzo(b)fluoranthene	1066	4.0	1277	0	83.4	40-140	0			
Benzo(k)fluoranthene	950.4	4.0	1277	0	74.4	40-140	0			
Chrysene	999	4.0	1277	0	78.2	40-140	0			
Dibenzo(a,h)anthracene	1388	4.0	1277	0	109	40-140	0			
Fluoranthene	1043	4.0	1277	0	81.7	40-140	0			
Fluorene	1084	4.0	1277	0	84.9	40-140	0			
Indeno(1,2,3-cd)pyrene	1554	4.0	1277	0	122	40-140	0			
Naphthalene	1067	4.0	1277	0	83.5	40-140	0			
Pyrene	796	4.0	1277	0	62.3	40-140	0			
Surr: 2-Fluorobiphenyl	2732	0	3194	0	85.5	20-140	0			
Surr: 4-Terphenyl-d14	1672	0	3194	0	52.4	22-172	0			
Surr: Nitrobenzene-d5	2277	0	3194	0	71.3	28-140	0			

MSD				Sample ID: 19101968-01B MSD				Units: µg/Kg		Analysis Date: 10/25/2019 04:00 P	
Client ID:			Run ID: SVMS6_191025A			SeqNo: 6015880		Prep Date: 10/25/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1031	4.0	1292	0	79.8	40-140	1009	2.13	30		
Anthracene	1178	4.0	1292	0	91.2	40-140	1097	7.08	30		
Benzo(a)anthracene	1077	4.0	1292	0	83.3	40-140	1069	0.674	30		
Benzo(a)pyrene	1123	4.0	1292	0	87	40-140	1146	2.03	30		
Benzo(b)fluoranthene	1030	4.0	1292	0	79.7	40-140	1066	3.39	30		
Benzo(k)fluoranthene	964.3	4.0	1292	0	74.6	40-140	950.4	1.44	30		
Chrysene	1005	4.0	1292	0	77.8	40-140	999	0.558	30		
Dibenzo(a,h)anthracene	1338	4.0	1292	0	104	40-140	1388	3.65	30		
Fluoranthene	1151	4.0	1292	0	89.1	40-140	1043	9.79	30		
Fluorene	1095	4.0	1292	0	84.8	40-140	1084	0.986	30		
Indeno(1,2,3-cd)pyrene	1474	4.0	1292	0	114	40-140	1554	5.3	30		
Naphthalene	1111	4.0	1292	0	86	40-140	1067	4.02	30		
Pyrene	823.3	4.0	1292	0	63.7	40-140	796	3.38	30		
Surr: 2-Fluorobiphenyl	2789	0	3230	0	86.4	20-140	2732	2.09	0		
Surr: 4-Terphenyl-d14	1717	0	3230	0	53.2	22-172	1672	2.63	0		
Surr: Nitrobenzene-d5	2598	0	3230	0	80.4	28-140	2277	13.2	0		

The following samples were analyzed in this batch:

19101949-06A	19101949-07A	19101949-08A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: XTO Energy
Work Order: 19101949
Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **144600** Instrument ID **WETCHEM** Method: **SW9045D**

LCS					Sample ID: LCS-144600-144600					Units: s.u.			Analysis Date: 10/25/2019 09:00 A				
Client ID:					Run ID: WETCHEM_191025B					SeqNo: 6011273			Prep Date: 10/24/2019			DF: 1	
Analyte					Result		PQL	SPK Val	SPK Ref Value	%REC		Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
pH					3.95		0.10	4	0	98.8		90-110		0			

DUP				Sample ID: 19101948-01A DUP				Units: s.u.			Analysis Date: 10/25/2019 09:00 A			
Client ID:				Run ID: WETCHEM_191025B				SeqNo: 6011280			Prep Date: 10/24/2019		DF: 1	
Analyte				Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
pH				7.54	0.10	0	0	0	0-0	7.49	0.665	20		
Temperature				20.6	0.10	0	0	0		20.6	0			

The following samples were analyzed in this batch:

19101949-06A	19101949-07A	19101949-08A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: XTO Energy
 Work Order: 19101949
 Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **144821** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK		Sample ID: MBLK-144821-144821				Units: mg/Kg		Analysis Date: 10/29/2019 03:55 P		
Client ID:		Run ID: WETCHEM_191029L		SeqNo: 6020103		Prep Date: 10/29/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent U 1.0

LCS		Sample ID: LCS-144821-144821				Units: mg/Kg		Analysis Date: 10/29/2019 03:55 P		
Client ID:		Run ID: WETCHEM_191029L		SeqNo: 6020104		Prep Date: 10/29/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.8 1.0 5 0 96 80-120 0

MS		Sample ID: 19102078-01A MS				Units: mg/Kg		Analysis Date: 10/29/2019 03:55 P		
Client ID:		Run ID: WETCHEM_191029L		SeqNo: 6020109		Prep Date: 10/29/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.8 1.0 5 0.6733 82.5 75-125 0

MS		Sample ID: 19102078-01A MSI				Units: mg/Kg		Analysis Date: 10/29/2019 03:55 P		
Client ID:		Run ID: WETCHEM_191029L		SeqNo: 6020111		Prep Date: 10/29/2019		DF: 100		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 2422 100 2349 0.6733 103 75-125 0

MSD		Sample ID: 19102078-01A MSD				Units: mg/Kg		Analysis Date: 10/29/2019 03:55 P		
Client ID:		Run ID: WETCHEM_191029L		SeqNo: 6020110		Prep Date: 10/29/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 5.111 1.0 5.051 0.6733 87.9 75-125 4.8 6.28 20

The following samples were analyzed in this batch:

19101949-06A	19101949-07A	19101949-08A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: XTO Energy
 Work Order: 19101949
 Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **R273782** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R273782				Units: % of sample		Analysis Date: 10/24/2019 04:18 P		
Client ID:		Run ID: MOIST_191024C				SeqNo: 6011970		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture U 0.10

LCS		Sample ID: LCS-R273782				Units: % of sample		Analysis Date: 10/24/2019 04:18 P		
Client ID:		Run ID: MOIST_191024C				SeqNo: 6011969		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 100 0.10 100 0 100 98-102 0

DUP		Sample ID: 19101902-03A DUP					Units: % of sample		Analysis Date: 10/24/2019 04:18 P		
Client ID:			Run ID: MOIST_191024C			SeqNo: 6011950		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture 4.32 0.10 0 0 0 0-0 4.37 1.15 10

DUP		Sample ID: 19101913-05A DUP					Units: % of sample		Analysis Date: 10/24/2019 04:18 P		
Client ID:			Run ID: MOIST_191024C			SeqNo: 6011957		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture 12.24 0.10 0 0 0 0-0 10.69 13.5 10 R

The following samples were analyzed in this batch:

19101949-01A	19101949-02A	19101949-03A
19101949-04A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: XTO Energy
 Work Order: 19101949
 Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **R274010** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R274010					Units: % of sample		Analysis Date: 10/28/2019 10:55 A		
Client ID:			Run ID: MOIST_191028B			SeqNo: 6018546		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture U 0.10

LCS		Sample ID: LCS-R274010					Units: % of sample		Analysis Date: 10/28/2019 10:55 A		
Client ID:			Run ID: MOIST_191028B			SeqNo: 6018545		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture 100 0.10 100 0 100 98-102 0

DUP		Sample ID: 19101991-03A DUP					Units: % of sample		Analysis Date: 10/28/2019 10:55 A		
Client ID:			Run ID: MOIST_191028B			SeqNo: 6018538		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture 9.58 0.10 0 0 0 0-0 9.68 1.04 10

DUP				Sample ID: 19101993-01B DUP				Units: % of sample			Analysis Date: 10/28/2019 10:55 A			
Client ID:				Run ID: MOIST_191028B				SeqNo: 6018540			Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				

Moisture 4.58 0.10 0 0 0 0-0 4.27 7.01 10

The following samples were analyzed in this batch:

19101949-05A	19101949-06A	19101949-07A
19101949-08A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



Failure to complete all section of this form may delay analysis.

COC number (for client tracking)

Page 1 of 1

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Note: (a) DW (Drinking water), SW (Surface water), GW (Ground water), WW (Waste water), S (Soil), SL (Sludge), SE (Sediment), OS (Other solid material)

ALS Technichem (HK) Pty Ltd Address: 11/F, Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong Tel: +852 2810 1044 Fax: +852 2810 2021 Email: HongKong@alsglobal.com

502 3.2°C

Sample Receipt Checklist

Client Name: **XTO - CO**

Date/Time Received: **24-Oct-19 09:30**

Work Order: **19101949**

Received by: **DS**

Checklist completed by Diane Shaw 24-Oct-19
eSignature Date

Reviewed by: Chad Whelton 24-Oct-19
eSignature Date

Matrices: **Soil**

Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>3.2/3.2 c</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>10/24/2019 2:18:34 PM</u>		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted by:	<u>-</u>		

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction: