



Crystal Weaver
Environmental Specialist
NMOCD District II

August 26, 2017

Re: MWJ Fed 1 workplan for the characterization of impacts – Case # 4297

Dear Ms. Weaver,

The purpose of this letter is to propose a workplan for the characterization of impacts associated with the MWJ Fed1 crude oil spill which occurred on June 19, 2017.

The spill was immediately mapped with Trimble in order to define the horizontal extent of the spill. The top 2-2.5' of the impacted area was excavated to prevent from further vertical migration of the salt impacts. When the initial excavation activities were completed, 6 samples were collected from 3 sampling locations (see attached map and lab data). The hydrocarbon impacts are either ND or way below the cleanup standards. The chloride concentrations are elevated. See table below.

Location	DRO (mg/kg)	GRO (mg/kg)	ORO (mg/kg)	Benzene (mg/kg)	Ethylbenzene (mg/kg)	Toluene (mg/kg)	Xylenes (mg/kg)	Chlorides (mg/kg)
(S1) 2.5' BGS (CS)	ND	ND	ND	ND	ND	ND	ND	6400
(S1) 2.5' BGS	ND	ND	ND	ND	ND	ND	ND	2100
(S2) 2' BGS (CS)	24	ND	72	ND	0.085	0.049	0.39	6800
(S2) 3' BGS	ND	ND	12	ND	ND	ND	ND	10000
(S3) 2' BGS (CS)	ND	ND	ND	ND	ND	ND	ND	2000
(S3) 3' BGS	ND	ND	ND	ND	ND	ND	ND	740

WPX would like to ask for permission to excavate two potholes, one near the SPCC containment berm and the second one near the sampling location S2, to delineate the extent of vertical impacts. WPX will submit the pothole results to OCD along with the cleanup plan for prior approval.

Please do not hesitate to call me if you have any questions.

Sincerely,

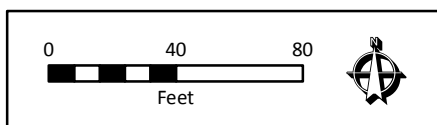
Karolina Blaney
WPX Energy
Environmental Specialist
(970) 589-0743
karolina.blaney@wpxenergy.com



MWJ FED 1
Permian Basin

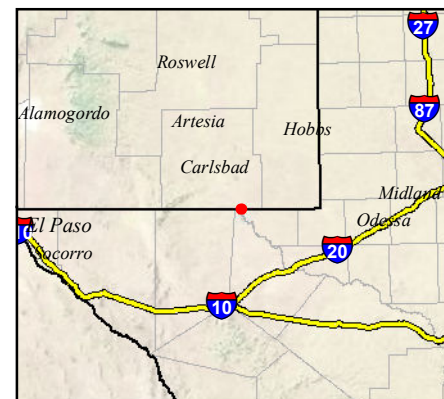
WPXENERGY.

Date: 8/18/2017
Map Scale (at 8.5" x 11"): 1:727
Projection: NAD 1927 UTM Zone 13N
Created By: Jeremy Andarakes
Facilities Engineering Dept - GIS
3500 One Williams Center
Tulsa, OK 74172



Map Symbolology

- ★ Point of Interest
- Area of Interest





25-Jul-2017

Karolina Blaney
WPX Energy
5315 Buena Vista Dr.
Carlsbad, NM 88220

Re: **MWJ Fed 1 (Post Excavation)**

Work Order: **1707861**

Dear Karolina,

ALS Environmental received 6 samples on 18-Jul-2017 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental 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 20.

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

Sincerely,

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

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Certificate No: MN 998501

Report of Laboratory Analysis

ADDRESS 3352 128th Ave Holland, Michigan 49424 | PHONE (616) 399-6070 | FAX (616) 399-6185

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www.alsglobal.com

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Client: WPX Energy
Project: MWJ Fed 1 (Post Excavation)
Work Order: 1707861

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>
1707861-01	MWJ Fed 1 (S1) 2.5' BGS-CS	Soil		7/13/2017 16:00	7/18/2017 09:30	☐
1707861-02	MWJ Fed 1 (S1) 3.5' BGS	Soil		7/13/2017 16:05	7/18/2017 09:30	☐
1707861-03	MWJ Fed 1 (S2) 2' BGS-CS	Soil		7/13/2017 16:15	7/18/2017 09:30	☐
1707861-04	MWJ Fed 1 (S2) 3' BGS	Soil		7/13/2017 16:20	7/18/2017 09:30	☐
1707861-05	MWJ Fed 1 (S3) 2' BGS-CS	Soil		7/13/2017 16:25	7/18/2017 09:30	☐
1707861-06	MWJ Fed 1 (S3) 3' BGS	Soil		7/13/2017 16:30	7/18/2017 09:30	☐

Client: WPX Energy
Project: MWJ Fed 1 (Post Excavation)
Work Order: 1707861

Case Narrative

Batch 104829, Method DRLVI_8015_S, Samples 1707861-01A and -03A: Low DRO surrogate recoveries due to sample matrix effects confirmed by re-extraction.

Client: WPX Energy
Project: MWJ Fed 1 (Post Excavation)
WorkOrder: 1707861

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	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
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.

Acronym	Description
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

Units Reported	Description
% of sample	Percent of Sample
mg/Kg-dry	Milligrams per Kilogram Dry Weight

ALS Group, USA

Date: 25-Jul-17

Client: WPX Energy
Project: MWJ Fed 1 (Post Excavation)
Sample ID: MWJ Fed 1 (S1) 2.5' BGS-CS
Collection Date: 7/13/2017 04:00 PM

Work Order: 1707861
Lab ID: 1707861-01
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
			SW8015C		Prep: SW3546 7/24/17 13:39	Analyst: KB
DRO (C10-C28)	ND		5.6	mg/Kg-dry	1	7/25/2017 03:59 AM
ORO (C28-C40)	ND		5.6	mg/Kg-dry	1	7/25/2017 03:59 AM
Surr: 4-Terphenyl-d14	26.1	S	34-130	%REC	1	7/25/2017 03:59 AM
GASOLINE RANGE ORGANICS BY GC-FID						
			SW8015D		Prep: SW5035 7/19/17 15:02	Analyst: KB
GRO (C6-C10)	ND		3.2	mg/Kg-dry	1	7/22/2017 12:48 PM
Surr: Toluene-d8	104		50-150	%REC	1	7/22/2017 12:48 PM
VOLATILE ORGANIC COMPOUNDS						
			SW8260B		Prep: SW5035 7/19/17 14:52	Analyst: AK
Benzene	ND		0.039	mg/Kg-dry	1	7/22/2017 09:20 PM
Ethylbenzene	ND		0.039	mg/Kg-dry	1	7/22/2017 09:20 PM
m,p-Xylene	ND		0.078	mg/Kg-dry	1	7/22/2017 09:20 PM
o-Xylene	ND		0.039	mg/Kg-dry	1	7/22/2017 09:20 PM
Toluene	ND		0.039	mg/Kg-dry	1	7/22/2017 09:20 PM
Xylenes, Total	ND		0.12	mg/Kg-dry	1	7/22/2017 09:20 PM
Surr: 1,2-Dichloroethane-d4	97.6		70-130	%REC	1	7/22/2017 09:20 PM
Surr: 4-Bromofluorobenzene	99.7		70-130	%REC	1	7/22/2017 09:20 PM
Surr: Dibromofluoromethane	88.6		70-130	%REC	1	7/22/2017 09:20 PM
Surr: Toluene-d8	97.0		70-130	%REC	1	7/22/2017 09:20 PM
CHLORIDE						
			A4500-CL E-97		Prep: EXTRACT 7/20/17 13:15	Analyst: LW
Chloride	6,400		110	mg/Kg-dry	10	7/20/2017 03:52 PM
MOISTURE						
			SW3550C			Analyst: SBR
Moisture	13		0.050	% of sample	1	7/19/2017 04:44 PM

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

ALS Group, USA

Date: 25-Jul-17

Client: WPX Energy
Project: MWJ Fed 1 (Post Excavation)
Sample ID: MWJ Fed 1 (S1) 3.5' BGS
Collection Date: 7/13/2017 04:05 PM

Work Order: 1707861
Lab ID: 1707861-02
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
			SW8015C		Prep: SW3546 7/19/17 16:29	Analyst: KB
DRO (C10-C28)	ND		5.7	mg/Kg-dry	1	7/22/2017 01:09 AM
ORO (C28-C40)	ND		5.7	mg/Kg-dry	1	7/22/2017 01:09 AM
Surr: 4-Terphenyl-d14	60.6		47-137	%REC	1	7/22/2017 01:09 AM
GASOLINE RANGE ORGANICS BY GC-FID						
			SW8015D		Prep: SW5035 7/19/17 15:02	Analyst: KB
GRO (C6-C10)	ND		3.2	mg/Kg-dry	1	7/22/2017 01:13 AM
Surr: Toluene-d8	103		50-150	%REC	1	7/22/2017 01:13 AM
VOLATILE ORGANIC COMPOUNDS						
			SW8260B		Prep: SW5035 7/19/17 14:52	Analyst: AK
Benzene	ND		0.039	mg/Kg-dry	1	7/22/2017 09:43 PM
Ethylbenzene	ND		0.039	mg/Kg-dry	1	7/22/2017 09:43 PM
m,p-Xylene	ND		0.078	mg/Kg-dry	1	7/22/2017 09:43 PM
o-Xylene	ND		0.039	mg/Kg-dry	1	7/22/2017 09:43 PM
Toluene	ND		0.039	mg/Kg-dry	1	7/22/2017 09:43 PM
Xylenes, Total	ND		0.12	mg/Kg-dry	1	7/22/2017 09:43 PM
Surr: 1,2-Dichloroethane-d4	97.4		70-130	%REC	1	7/22/2017 09:43 PM
Surr: 4-Bromofluorobenzene	100		70-130	%REC	1	7/22/2017 09:43 PM
Surr: Dibromofluoromethane	87.3		70-130	%REC	1	7/22/2017 09:43 PM
Surr: Toluene-d8	97.0		70-130	%REC	1	7/22/2017 09:43 PM
CHLORIDE						
			A4500-CL E-97		Prep: EXTRACT 7/20/17 13:15	Analyst: LW
Chloride	2,100		46	mg/Kg-dry	4	7/20/2017 03:52 PM
MOISTURE						
			SW3550C			Analyst: SBR
Moisture	13		0.050	% of sample	1	7/19/2017 04:44 PM

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

ALS Group, USA

Date: 25-Jul-17

Client: WPX Energy
Project: MWJ Fed 1 (Post Excavation)
Sample ID: MWJ Fed 1 (S2) 2' BGS-CS
Collection Date: 7/13/2017 04:15 PM

Work Order: 1707861
Lab ID: 1707861-03
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
			SW8015C		Prep: SW3546 7/24/17 13:39	Analyst: KB
DRO (C10-C28)	24		5.5	mg/Kg-dry	1	7/25/2017 04:28 AM
ORO (C28-C40)	72		5.5	mg/Kg-dry	1	7/25/2017 04:28 AM
Surr: 4-Terphenyl-d14	17.8	S	34-130	%REC	1	7/25/2017 04:28 AM
GASOLINE RANGE ORGANICS BY GC-FID						
			SW8015D		Prep: SW5035 7/19/17 15:02	Analyst: KB
GRO (C6-C10)	ND		3.0	mg/Kg-dry	1	7/22/2017 02:05 AM
Surr: Toluene-d8	103		50-150	%REC	1	7/22/2017 02:05 AM
VOLATILE ORGANIC COMPOUNDS						
			SW8260B		Prep: SW5035 7/19/17 14:52	Analyst: AK
Benzene	ND		0.036	mg/Kg-dry	1	7/22/2017 10:05 PM
Ethylbenzene	ND		0.036	mg/Kg-dry	1	7/22/2017 10:05 PM
m,p-Xylene	ND		0.071	mg/Kg-dry	1	7/22/2017 10:05 PM
o-Xylene	ND		0.036	mg/Kg-dry	1	7/22/2017 10:05 PM
Toluene	ND		0.036	mg/Kg-dry	1	7/22/2017 10:05 PM
Xylenes, Total	ND		0.11	mg/Kg-dry	1	7/22/2017 10:05 PM
Surr: 1,2-Dichloroethane-d4	95.3		70-130	%REC	1	7/22/2017 10:05 PM
Surr: 4-Bromofluorobenzene	101		70-130	%REC	1	7/22/2017 10:05 PM
Surr: Dibromofluoromethane	86.3		70-130	%REC	1	7/22/2017 10:05 PM
Surr: Toluene-d8	97.4		70-130	%REC	1	7/22/2017 10:05 PM
CHLORIDE						
			A4500-CL E-97		Prep: EXTRACT 7/20/17 13:15	Analyst: LW
Chloride	6,800		110	mg/Kg-dry	10	7/20/2017 03:52 PM
MOISTURE						
			SW3550C			Analyst: SBR
Moisture	8.5		0.050	% of sample	1	7/19/2017 04:44 PM

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

ALS Group, USA

Date: 25-Jul-17

Client: WPX Energy
Project: MWJ Fed 1 (Post Excavation)
Sample ID: MWJ Fed 1 (S2) 3' BGS
Collection Date: 7/13/2017 04:20 PM

Work Order: 1707861
Lab ID: 1707861-04
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
			SW8015C		Prep: SW3546 7/24/17 13:39	Analyst: KB
DRO (C10-C28)	ND		5.4	mg/Kg-dry	1	7/25/2017 04:57 AM
ORO (C28-C40)	12		5.4	mg/Kg-dry	1	7/25/2017 04:57 AM
Surr: 4-Terphenyl-d14	47.8		34-130	%REC	1	7/25/2017 04:57 AM
GASOLINE RANGE ORGANICS BY GC-FID						
			SW8015D		Prep: SW5035 7/19/17 15:02	Analyst: KB
GRO (C6-C10)	ND		3.0	mg/Kg-dry	1	7/22/2017 02:30 AM
Surr: Toluene-d8	103		50-150	%REC	1	7/22/2017 02:30 AM
VOLATILE ORGANIC COMPOUNDS						
			SW8260B		Prep: SW5035 7/19/17 14:52	Analyst: AK
Benzene	ND		0.036	mg/Kg-dry	1	7/22/2017 10:27 PM
Ethylbenzene	ND		0.036	mg/Kg-dry	1	7/22/2017 10:27 PM
m,p-Xylene	ND		0.072	mg/Kg-dry	1	7/22/2017 10:27 PM
o-Xylene	ND		0.036	mg/Kg-dry	1	7/22/2017 10:27 PM
Toluene	ND		0.036	mg/Kg-dry	1	7/22/2017 10:27 PM
Xylenes, Total	ND		0.11	mg/Kg-dry	1	7/22/2017 10:27 PM
Surr: 1,2-Dichloroethane-d4	96.8		70-130	%REC	1	7/22/2017 10:27 PM
Surr: 4-Bromofluorobenzene	98.6		70-130	%REC	1	7/22/2017 10:27 PM
Surr: Dibromofluoromethane	88.2		70-130	%REC	1	7/22/2017 10:27 PM
Surr: Toluene-d8	98.3		70-130	%REC	1	7/22/2017 10:27 PM
CHLORIDE						
			A4500-CL E-97		Prep: EXTRACT 7/20/17 13:15	Analyst: LW
Chloride	10,000		110	mg/Kg-dry	10	7/20/2017 03:52 PM
MOISTURE						
			SW3550C			Analyst: SBR
Moisture	9.4		0.050	% of sample	1	7/19/2017 04:44 PM

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

ALS Group, USA

Date: 25-Jul-17

Client: WPX Energy
Project: MWJ Fed 1 (Post Excavation)
Sample ID: MWJ Fed 1 (S3) 2' BGS-CS
Collection Date: 7/13/2017 04:25 PM

Work Order: 1707861
Lab ID: 1707861-05
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
			SW8015C		Prep: SW3546 7/24/17 13:39	Analyst: KB
DRO (C10-C28)	ND		5.3	mg/Kg-dry	1	7/25/2017 05:26 AM
ORO (C28-C40)	ND		5.3	mg/Kg-dry	1	7/25/2017 05:26 AM
Surr: 4-Terphenyl-d14	41.4		34-130	%REC	1	7/25/2017 05:26 AM
GASOLINE RANGE ORGANICS BY GC-FID						
			SW8015D		Prep: SW5035 7/19/17 15:02	Analyst: KB
GRO (C6-C10)	ND		2.9	mg/Kg-dry	1	7/22/2017 02:56 AM
Surr: Toluene-d8	102		50-150	%REC	1	7/22/2017 02:56 AM
VOLATILE ORGANIC COMPOUNDS						
			SW8260B		Prep: SW5035 7/19/17 14:52	Analyst: AK
Benzene	ND		0.035	mg/Kg-dry	1	7/22/2017 10:49 PM
Ethylbenzene	ND		0.035	mg/Kg-dry	1	7/22/2017 10:49 PM
m,p-Xylene	ND		0.069	mg/Kg-dry	1	7/22/2017 10:49 PM
o-Xylene	ND		0.035	mg/Kg-dry	1	7/22/2017 10:49 PM
Toluene	ND		0.035	mg/Kg-dry	1	7/22/2017 10:49 PM
Xylenes, Total	ND		0.10	mg/Kg-dry	1	7/22/2017 10:49 PM
Surr: 1,2-Dichloroethane-d4	96.6		70-130	%REC	1	7/22/2017 10:49 PM
Surr: 4-Bromofluorobenzene	100		70-130	%REC	1	7/22/2017 10:49 PM
Surr: Dibromofluoromethane	86.4		70-130	%REC	1	7/22/2017 10:49 PM
Surr: Toluene-d8	97.7		70-130	%REC	1	7/22/2017 10:49 PM
CHLORIDE						
			A4500-CL E-97		Prep: EXTRACT 7/20/17 13:15	Analyst: LW
Chloride	2,000		43	mg/Kg-dry	4	7/20/2017 03:52 PM
MOISTURE						
			SW3550C			Analyst: SBR
Moisture	7.1		0.050	% of sample	1	7/19/2017 04:44 PM

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

ALS Group, USA

Date: 25-Jul-17

Client: WPX Energy
Project: MWJ Fed 1 (Post Excavation)
Sample ID: MWJ Fed 1 (S3) 3' BGS
Collection Date: 7/13/2017 04:30 PM

Work Order: 1707861
Lab ID: 1707861-06
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
			SW8015C		Prep: SW3546 7/20/17 09:58	Analyst: KB
DRO (C10-C28)	ND		5.4	mg/Kg-dry	1	7/22/2017 05:01 AM
ORO (C28-C40)	ND		5.4	mg/Kg-dry	1	7/22/2017 05:01 AM
Surr: 4-Terphenyl-d14	47.0		47-137	%REC	1	7/22/2017 05:01 AM
GASOLINE RANGE ORGANICS BY GC-FID						
			SW8015D		Prep: SW5035 7/19/17 15:02	Analyst: KB
GRO (C6-C10)	ND		3.0	mg/Kg-dry	1	7/22/2017 03:22 AM
Surr: Toluene-d8	102		50-150	%REC	1	7/22/2017 03:22 AM
VOLATILE ORGANIC COMPOUNDS						
			SW8260B		Prep: SW5035 7/19/17 14:52	Analyst: AK
Benzene	ND		0.035	mg/Kg-dry	1	7/22/2017 11:12 PM
Ethylbenzene	ND		0.035	mg/Kg-dry	1	7/22/2017 11:12 PM
m,p-Xylene	ND		0.071	mg/Kg-dry	1	7/22/2017 11:12 PM
o-Xylene	ND		0.035	mg/Kg-dry	1	7/22/2017 11:12 PM
Toluene	ND		0.035	mg/Kg-dry	1	7/22/2017 11:12 PM
Xylenes, Total	ND		0.11	mg/Kg-dry	1	7/22/2017 11:12 PM
Surr: 1,2-Dichloroethane-d4	95.7		70-130	%REC	1	7/22/2017 11:12 PM
Surr: 4-Bromofluorobenzene	99.7		70-130	%REC	1	7/22/2017 11:12 PM
Surr: Dibromofluoromethane	86.2		70-130	%REC	1	7/22/2017 11:12 PM
Surr: Toluene-d8	98.0		70-130	%REC	1	7/22/2017 11:12 PM
CHLORIDE						
			A4500-CL E-97		Prep: EXTRACT 7/20/17 13:15	Analyst: LW
Chloride	740		11	mg/Kg-dry	1	7/20/2017 03:52 PM
MOISTURE						
			SW3550C			Analyst: SBR
Moisture	8.3		0.050	% of sample	1	7/19/2017 04:44 PM

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

Client: WPX Energy

Work Order: 1707861

Project: MWJ Fed 1 (Post Excavation)

QC BATCH REPORT

Batch ID: 104668

Instrument ID GC8

Method: SW8015C

MBLK		Sample ID: DBLKS1-104668-104668				Units: mg/Kg		Analysis Date: 7/19/2017 05:47 PM		
Client ID:		Run ID: GC8_170719B				SeqNo: 4539791		Prep Date: 7/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)

ND

5.0

ORO (C28-C40)

ND

5.0

Surr: 4-Terphenyl-d14

2.083

0

3.33

0

62.6

47-137

0

LCS		Sample ID: DLCSS1-104668-104668				Units: mg/Kg		Analysis Date: 7/19/2017 06:16 PM		
Client ID:		Run ID: GC8_170719B				SeqNo: 4539792		Prep Date: 7/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)

245

5.0

333

0

73.6

65-122

0

ORO (C28-C40)

276.1

5.0

333

0

82.9

81-116

0

Surr: 4-Terphenyl-d14

2.1

0

3.33

0

63.1

47-137

0

MS		Sample ID: 1707859-05A MS				Units: mg/Kg		Analysis Date: 7/19/2017 06:45 PM		
Client ID:		Run ID: GC8_170719B				SeqNo: 4539793		Prep Date: 7/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)

170.8

4.9

327.9

0

52.1

65-122

0

S

ORO (C28-C40)

176.6

4.9

327.9

3.026

52.9

81-116

0

S

Surr: 4-Terphenyl-d14

1.559

0

3.279

0

47.5

47-137

0

MSD		Sample ID: 1707859-05A MSD				Units: mg/Kg		Analysis Date: 7/19/2017 07:14 PM		
Client ID:		Run ID: GC8_170719B				SeqNo: 4539794		Prep Date: 7/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)

184.4

5.0

329.9

0

55.9

65-122

170.8

7.68

30

S

ORO (C28-C40)

198.5

5.0

329.9

3.026

59.2

81-116

176.6

11.7

30

S

Surr: 4-Terphenyl-d14

1.717

0

3.299

0

52.1

47-137

1.559

9.65

30

The following samples were analyzed in this batch:

1707861-01A

1707861-02A

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

Client: WPX Energy
 Work Order: 1707861
 Project: MWJ Fed 1 (Post Excavation)

QC BATCH REPORT

Batch ID: **104692** Instrument ID **GC8** Method: **SW8015C**

MBLK		Sample ID: DBLKS1-104692-104692				Units: mg/Kg		Analysis Date: 7/20/2017 01:50 PM		
Client ID:		Run ID: GC8_170720A				SeqNo: 4540983		Prep Date: 7/20/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)

ND

5.0

ORO (C28-C40)

ND

5.0

Surr: 4-Terphenyl-d14

1.867

0

3.33

0

56.1

47-137

0

LCS		Sample ID: DLCSS1-104692-104692				Units: mg/Kg		Analysis Date: 7/20/2017 02:19 PM		
Client ID:		Run ID: GC8_170720A				SeqNo: 4540984		Prep Date: 7/20/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)

233.8

5.0

333

0

70.2

65-122

0

ORO (C28-C40)

275.1

5.0

333

0

82.6

81-116

0

Surr: 4-Terphenyl-d14

1.917

0

3.33

0

57.6

47-137

0

MS		Sample ID: 1707968-04B MS				Units: mg/Kg		Analysis Date: 7/22/2017 01:38 AM		
Client ID:		Run ID: GC8_170721A				SeqNo: 4544317		Prep Date: 7/20/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)

239.3

5.0

330.6

0

72.4

65-122

0

ORO (C28-C40)

270.1

5.0

330.6

0

81.7

81-116

0

Surr: 4-Terphenyl-d14

2.002

0

3.306

0

60.6

47-137

0

MSD		Sample ID: 1707968-04B MSD				Units: mg/Kg		Analysis Date: 7/22/2017 02:07 AM		
Client ID:		Run ID: GC8_170721A				SeqNo: 4544318		Prep Date: 7/20/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)

273.8

4.9

328

0

83.5

65-122

239.3

13.4

30

ORO (C28-C40)

267.5

4.9

328

0

81.6

81-116

270.1

0.955

30

Surr: 4-Terphenyl-d14

2.167

0

3.28

0

66.1

47-137

2.002

7.89

30

The following samples were analyzed in this batch:

1707861-03A	1707861-04A	1707861-05A
1707861-06A		

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

Client: WPX Energy
 Work Order: 1707861
 Project: MWJ Fed 1 (Post Excavation)

QC BATCH REPORT

Batch ID: **104829** Instrument ID **GC8** Method: **SW8015C**

MBLK		Sample ID: DBLKS1-104829-104829				Units: mg/Kg		Analysis Date: 7/24/2017 09:14 PM		
Client ID:		Run ID: GC8_170724C				SeqNo: 4546287		Prep Date: 7/24/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	ND	5.0								
ORO (C28-C40)	ND	5.0								
<i>Surr: 4-Terphenyl-d14</i>	2.127	0	3.33	0	63.9	34-130	0			

LCS		Sample ID: DLCSS1-104829-104829				Units: mg/Kg		Analysis Date: 7/24/2017 09:43 PM		
Client ID:		Run ID: GC8_170724C				SeqNo: 4546288		Prep Date: 7/24/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	251.8	5.0	333	0	75.6	65-122	0			
ORO (C28-C40)	283.6	5.0	333	0	85.2	81-116	0			
<i>Surr: 4-Terphenyl-d14</i>	2.195	0	3.33	0	65.9	34-130	0			

MS		Sample ID: 1707855-01A MS				Units: mg/Kg		Analysis Date: 7/25/2017 10:12 PM		
Client ID:		Run ID: GC8_170724C				SeqNo: 4546276		Prep Date: 7/24/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	193.2	4.8	318.4	0	60.7	65-122	0			S
ORO (C28-C40)	200.4	4.8	318.4	1.159	62.6	81-116	0			S
<i>Surr: 4-Terphenyl-d14</i>	1.315	0	3.184	0	41.3	34-130	0			

MSD		Sample ID: 1707855-01A MSD				Units: mg/Kg		Analysis Date: 7/24/2017 10:41 PM		
Client ID:		Run ID: GC8_170724C				SeqNo: 4546277		Prep Date: 7/24/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	169.3	4.9	325.5	0	52	65-122	193.2	13.2	30	S
ORO (C28-C40)	188.3	4.9	325.5	1.159	57.5	81-116	200.4	6.21	30	S
<i>Surr: 4-Terphenyl-d14</i>	1.386	0	3.255	0	42.6	34-130	1.315	5.31	30	

The following samples were analyzed in this batch:

1707861-01A	1707861-03A	1707861-04A
1707861-05A		

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

Client: WPX Energy
 Work Order: 1707861
 Project: MWJ Fed 1 (Post Excavation)

QC BATCH REPORT

Batch ID: **104669** Instrument ID **GC9** Method: **SW8015D**

MBLK		Sample ID: MBLK-104669-104669				Units: µg/Kg-dry		Analysis Date: 7/21/2017 05:00 PM		
Client ID:		Run ID: GC9_170721B				SeqNo: 4544469		Prep Date: 7/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	ND	2,500								
Surr: Toluene-d8	5025	0	5000	0	100	50-150	0			

LCS		Sample ID: LCS-104669-104669				Units: µg/Kg-dry		Analysis Date: 7/21/2017 04:07 PM		
Client ID:		Run ID: GC9_170721B				SeqNo: 4544468		Prep Date: 7/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	459900	2,500	500000	0	92	70-130	0			
Surr: Toluene-d8	5364	0	5000	0	107	50-150	0			

MS		Sample ID: 1707861-06A MS				Units: µg/Kg-dry		Analysis Date: 7/21/2017 05:26 PM		
Client ID: MWJ Fed 1 (S3) 3' BGS		Run ID: GC9_170721B				SeqNo: 4544470		Prep Date: 7/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	568600	3,000	590500	0	96.3	70-130	0			
Surr: Toluene-d8	6820	0	5905	0	115	50-150	0			

MSD		Sample ID: 1707861-06A MSD				Units: µg/Kg-dry		Analysis Date: 7/21/2017 05:52 PM		
Client ID: MWJ Fed 1 (S3) 3' BGS		Run ID: GC9_170721B				SeqNo: 4544471		Prep Date: 7/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	592800	3,000	590500	0	100	70-130	568600	4.15	30	
Surr: Toluene-d8	6777	0	5905	0	115	50-150	6820	0.634	30	

The following samples were analyzed in this batch:

1707861-01A	1707861-02A	1707861-03A
1707861-04A	1707861-05A	1707861-06A

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

Client: WPX Energy
 Work Order: 1707861
 Project: MWJ Fed 1 (Post Excavation)

QC BATCH REPORT

Batch ID: **104667** Instrument ID **VMS9** Method: **SW8260B**

Sample ID: MBLK-104667-104667				Units: µg/Kg-dry			Analysis Date: 7/22/2017 07:29 PM			
Client ID:		Run ID: VMS9_170722A			SeqNo: 4545116		Prep Date: 7/19/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	30								
Ethylbenzene	ND	30								
m,p-Xylene	ND	60								
o-Xylene	ND	30								
Toluene	ND	30								
Xylenes, Total	ND	90								
Surr: 1,2-Dichloroethane-d4	954	0	1000	0	95.4	70-130	0			
Surr: 4-Bromofluorobenzene	1008	0	1000	0	101	70-130	0			
Surr: Dibromofluoromethane	892.5	0	1000	0	89.2	70-130	0			
Surr: Toluene-d8	981	0	1000	0	98.1	70-130	0			

LCS				Sample ID: LCS-104667-104667			Units: µg/Kg-dry		Analysis Date: 7/22/2017 06:22 PM		
Client ID:		Run ID: VMS9_170722A			SeqNo: 4545115		Prep Date: 7/19/2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	1002	30	1000	0	100	75-125	0				
Ethylbenzene	997	30	1000	0	99.7	75-125	0				
m,p-Xylene	1974	60	2000	0	98.7	80-125	0				
o-Xylene	1040	30	1000	0	104	75-125	0				
Toluene	986.5	30	1000	0	98.6	70-125	0				
Xylenes, Total	3014	90	3000	0	100	75-125	0				
Surr: 1,2-Dichloroethane-d4	967	0	1000	0	96.7	70-130	0				
Surr: 4-Bromofluorobenzene	992	0	1000	0	99.2	70-130	0				
Surr: Dibromofluoromethane	1038	0	1000	0	104	70-130	0				
Surr: Toluene-d8	1002	0	1000	0	100	70-130	0				

MS					Sample ID: 1707861-06A MS		Units: µg/Kg-dry		Analysis Date: 7/23/2017 03:16 AM		
Client ID: MWJ Fed 1 (S3) 3' BGS			Run ID: VMS9_170722A			SeqNo: 4545135		Prep Date: 7/19/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	1042	35	1181	0	88.2	75-125	0				
Ethylbenzene	1053	35	1181	0	89.2	75-125	0				
m,p-Xylene	2118	71	2362	0	89.7	80-125	0				
o-Xylene	1128	35	1181	0	95.5	75-125	0				
Toluene	1015	35	1181	0	85.9	70-125	0				
Xylenes, Total	3246	110	3543	0	91.6	75-125	0				
Surr: 1,2-Dichloroethane-d4	1112	0	1181	0	94.2	70-130	0				
Surr: 4-Bromofluorobenzene	1205	0	1181	0	102	70-130	0				
Surr: Dibromofluoromethane	1154	0	1181	0	97.8	70-130	0				
Surr: Toluene-d8	1138	0	1181	0	96.4	70-130	0				

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

Client: WPX Energy
 Work Order: 1707861
 Project: MWJ Fed 1 (Post Excavation)

QC BATCH REPORT

Batch ID: **104667** Instrument ID **VMS9** Method: **SW8260B**

MSD				Sample ID: 1707861-06A MSD			Units: µg/Kg-dry		Analysis Date: 7/23/2017 03:39 AM		
Client ID: MWJ Fed 1 (S3) 3' BGS				Run ID: VMS9_170722A			SeqNo: 4545136		Prep Date: 7/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	1088	35	1181	0	92.1	75-125	1042	4.33	30		
Ethylbenzene	1083	35	1181	0	91.7	75-125	1053	2.76	30		
m,p-Xylene	2161	71	2362	0	91.5	80-125	2118	1.99	30		
o-Xylene	1120	35	1181	0	94.8	75-125	1128	0.736	30		
Toluene	1032	35	1181	0	87.4	70-125	1015	1.67	30		
Xylenes, Total	3280	110	3543	0	92.6	75-125	3246	1.05	30		
Surr: 1,2-Dichloroethane-d4	1132	0	1181	0	95.8	70-130	1112	1.79	30		
Surr: 4-Bromofluorobenzene	1202	0	1181	0	102	70-130	1205	0.294	30		
Surr: Dibromofluoromethane	1157	0	1181	0	98	70-130	1154	0.204	30		
Surr: Toluene-d8	1139	0	1181	0	96.4	70-130	1138	0.104	30		

The following samples were analyzed in this batch:

1707861-01A	1707861-02A	1707861-03A
1707861-04A	1707861-05A	1707861-06A

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

Client: WPX Energy
 Work Order: 1707861
 Project: MWJ Fed 1 (Post Excavation)

QC BATCH REPORT

Batch ID: **104729** Instrument ID **GALLERY** Method: **A4500-CI E-97**

MBLK		Sample ID: MBLK-104729-104729				Units: mg/Kg		Analysis Date: 7/20/2017 03:52 PM		
Client ID:		Run ID: GALLERY_170720B		SeqNo: 4541394		Prep Date: 7/20/2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chloride ND 10

MS		Sample ID: 1707859-02A MS				Units: mg/Kg		Analysis Date: 7/20/2017 03:52 PM		
Client ID:		Run ID: GALLERY_170720B		SeqNo: 4541396		Prep Date: 7/20/2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chloride 810.1 10 501 299.2 102 75-125 0

MSD		Sample ID: 1707859-02A MSD				Units: mg/Kg		Analysis Date: 7/20/2017 03:52 PM		
Client ID:		Run ID: GALLERY_170720B		SeqNo: 4541397		Prep Date: 7/20/2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chloride 802.4 10 501 299.2 100 75-125 810.1 0.957 25

LCS1		Sample ID: LCS1-104729-104729				Units: mg/Kg		Analysis Date: 7/20/2017 03:52 PM		
Client ID:		Run ID: GALLERY_170720B		SeqNo: 4541410		Prep Date: 7/20/2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chloride 107.2 10 100 0 107 80-120 0

LCS2		Sample ID: LCS2-104729-104729				Units: mg/Kg		Analysis Date: 7/20/2017 03:52 PM		
Client ID:		Run ID: GALLERY_170720B		SeqNo: 4541411		Prep Date: 7/20/2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chloride 522.8 10 500 0 105 80-120 0

The following samples were analyzed in this batch:

1707861-01A	1707861-02A	1707861-03A
1707861-04A	1707861-05A	1707861-06A

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

Client: WPX Energy
 Work Order: 1707861
 Project: MWJ Fed 1 (Post Excavation)

QC BATCH REPORT

Batch ID: **R216145** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R216145				Units: % of sample		Analysis Date: 7/19/2017 04:44 PM		
Client ID:		Run ID: MOIST_170719C				SeqNo: 4539616		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture ND 0.050

LCS		Sample ID: LCS-R216145				Units: % of sample		Analysis Date: 7/19/2017 04:44 PM		
Client ID:		Run ID: MOIST_170719C				SeqNo: 4539615		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 100 0.050 100 0 100 99.5-100.5 0

DUP		Sample ID: 1707859-04A DUP				Units: % of sample		Analysis Date: 7/19/2017 04:44 PM		
Client ID:		Run ID: MOIST_170719C				SeqNo: 4539602		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 5.93 0.050 0 0 0 0-0 6.02 1.51 5

DUP		Sample ID: 1707861-03A DUP				Units: % of sample		Analysis Date: 7/19/2017 04:44 PM		
Client ID: MWJ Fed 1 (S2) 2' BGS-CS		Run ID: MOIST_170719C				SeqNo: 4539610		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 8.52 0.050 0 0 0 0-0 8.46 0.707 5

The following samples were analyzed in this batch:

1707861-01A	1707861-02A	1707861-03A
1707861-04A	1707861-05A	1707861-06A

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

Chain-of-Custody

Form 2020a

WORKORDER

170786

PAGE

1 of 1

DISPOSAL

By Lab or Return to Client

[illegible]

*Time Zone (Circle): EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

For metals or anions, please detail analytes below.

Comments: 	QC PACKAGE (check below)	
	☒	LEVEL II (Standard QC)
	☐	LEVEL III (Std QC + forms)
	☐	LEVEL IV (Std QC + forms + raw data)
	☐	
Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035		

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY	<i>Karolina Blaney</i>	Karolina Blaney	7/17/2017	15:00
RECEIVED BY	<i>[Signature]</i>	KATH WIERENCA	7/18/17	0930
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				

Sample Receipt Checklist

Client Name: **WPX - NM**

Date/Time Received: **18-Jul-17 09:30**

Work Order: **1707861**

Received by: **KRW**

Checklist completed by Keith Wurenga
eSignature

18-Jul-17
Date

Reviewed by: Chad Whelton
eSignature

19-Jul-17
Date

Matrices: **Soil**

Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☒
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time?	Yes ☒	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☒	No ☐	
Sample(s) received on ice?	Yes ☒	No ☐	
Temperature(s)/Thermometer(s):	<u>2.8/2.8 C</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>7/18/2017 2:31:06 PM</u>		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☒
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☒
pH adjusted?	Yes ☐	No ☐	N/A ☒
pH adjusted by:	<u>-</u>		

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction: