



Crystal Weaver
Environmental Specialist
NMOCD District II

January 24, 2018

Re: RDU 45 – Case # 2RP-4519

Dear Ms. Weaver,

The purpose of this letter is to propose a workplan and characterization of impacts associated with the Ross Draw Unit 45 spill which occurred on and December 2, 2017.

This release was immediately mapped with a Trimble to define the horizontal extent of the impacts. Impacted soils on well pad surface were scraped, and the flowline was uncovered to repair the area where the release originated. The point of origin was also recorded with a Trimble, as indicated on attached map. Samples of the cleanup area were collected on 12/14/2017 to a depth of 7' and are summarized in the below table and attached:

Location	Date	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) 0'	12/14/17	1,300	2,400	580	1.9	4.4	18	22	19,000
(S1) 1'	12/14/17	ND	11	14	ND	ND	ND	ND	1400
(S2) 2'	12/14/17	ND	5.9	ND	ND	ND	ND	ND	390
(S2) 4'	12/14/17	-	-	-	-	-	-	-	1600
(S3) 6'	12/14/17	-	-	-	-	-	-	-	68
(S3) 7'	12/14/17	-	-	-	-	-	-	-	2300

Based on the information obtained from the NMOSE web site, the closest surface water feature (ephemeral drainage) is located more than 2000' southwest of the spill site. Based on the OSE ground water data, the Trend Map and the site elevation, depth to groundwater is more than 100'. There are no private domestic water sources within 1000' of the site. Therefore, the ranking for this site is 0. See attached OSE report for wells located within 5000m from the pad site.

Additional soil samples to depth were gathered in several areas surrounding the point of origin on 1/19/2018. These samples are currently being processed.

WPX proposes that the additional samples collected on 1/19/2018 be reviewed and submitted to OCD and BLM, along with an updated work plan if further remediation is required.

Please call me if you have any questions.

Sincerely,

Jim Raley
WPX Energy
Environmental Specialist
(575) 689-7597
james.raley@wpxenergy.com



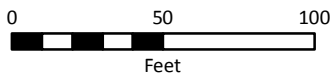
RDU 45
Permian Basin



Date: 1/9/2018
Map Scale (at 8.5" x 11"): 1:762
Projection: GCS WGS 1984
Created By: Sarah Harrison
Geospatial Data Tech II
3800 One Williams Center
Tulsa, OK 74172

Map Symbology

- ★ Point of Interest
- Area of Interest





22-Dec-2017

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

Re: **RDU 45 Cleanup Confirmation**

Work Order: **17121004**

Dear Karolina,

ALS Environmental received 6 samples on 15-Dec-2017 10:00 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

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

Environmental 

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: WPX Energy
Project: RDU 45 Cleanup Confirmation
Work Order: 17121004

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>
17121004-01	RDU 45 S1 0'	Soil		12/14/2017 11:00	12/15/2017 10:00	☐
17121004-02	RDU 45 S1 1'	Soil		12/14/2017 11:05	12/15/2017 10:00	☐
17121004-03	RDU 45 S1 2'	Soil		12/14/2017 11:10	12/15/2017 10:00	☐
17121004-04	RDU 45 S1 4'	Soil		12/14/2017 11:15	12/15/2017 10:00	☐
17121004-05	RDU 45 S1 6'	Soil		12/14/2017 11:20	12/15/2017 10:00	☐
17121004-06	RDU 45 S1 7'	Soil		12/14/2017 11:25	12/15/2017 10:00	☐

Client: WPX Energy
Project: RDU 45 Cleanup Confirmation
Work Order: 17121004

Case Narrative

Batch 112023, Method DRLVI_8015_S, Sample DLCSS1-112023: The LCS recovery was above the upper control limit for ORO. The sample results for this batch may be biased high.

Batch 112096, Method DRLVI_8015_S, Sample DLCSS1-112096: The LCS recovery was above the upper control limit for ORO. The sample results for this batch may be biased high.

Batch 112096, Method DRLVI_8015_S, Sample 17121004-01A: DRO surrogate recovery low due to sample matrix interference.

Client: WPX Energy
Project: RDU 45 Cleanup Confirmation
WorkOrder: 17121004

QUALIFIERS, ACRONYMS, UNITS

<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
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
mg/Kg-dry	Milligrams per Kilogram Dry Weight

ALS Group, USA

Date: 22-Dec-17

Client: WPX Energy
Project: RDU 45 Cleanup Confirmation
Sample ID: RDU 45 S1 0'
Collection Date: 12/14/2017 11:00 AM

Work Order: 17121004
Lab ID: 17121004-01
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
			SW8015C		Prep: SW3546 12/20/17 11:21	Analyst: MEB
DRO (C10-C28)	1,300		5.4	mg/Kg-dry	1	12/20/2017 08:18 PM
ORO (C28-C40)	580		5.4	mg/Kg-dry	1	12/20/2017 08:18 PM
Surr: 4-Terphenyl-d14	29.5	S	34-130	%REC	1	12/20/2017 08:18 PM
GASOLINE RANGE ORGANICS BY GC-FID						
			SW8015D		Prep: SW5035 12/19/17 00:00	Analyst: MEB
GRO (C6-C10)	2,400		59	mg/Kg-dry	10	12/20/2017 12:36 PM
Surr: Toluene-d8	96.8		71-123	%REC	10	12/20/2017 12:36 PM
VOLATILE ORGANIC COMPOUNDS						
			SW8260B		Prep: SW5035 12/19/17 10:26	Analyst: BG
Benzene	1.9		0.30	mg/Kg-dry	10	12/21/2017 05:27 AM
Ethylbenzene	4.4		0.30	mg/Kg-dry	10	12/21/2017 05:27 AM
m,p-Xylene	14		0.60	mg/Kg-dry	10	12/21/2017 05:27 AM
o-Xylene	8.6		0.30	mg/Kg-dry	10	12/21/2017 05:27 AM
Toluene	18		0.30	mg/Kg-dry	10	12/21/2017 05:27 AM
Xylenes, Total	22		0.90	mg/Kg-dry	10	12/21/2017 05:27 AM
Surr: 1,2-Dichloroethane-d4	89.0		70-130	%REC	10	12/21/2017 05:27 AM
Surr: 4-Bromofluorobenzene	113		70-130	%REC	10	12/21/2017 05:27 AM
Surr: Dibromofluoromethane	92.7		70-130	%REC	10	12/21/2017 05:27 AM
Surr: Toluene-d8	119		70-130	%REC	10	12/21/2017 05:27 AM
CHLORIDE						
			A4500-CL E-11		Prep: EXTRACT 12/18/17 15:20	Analyst: STP
Chloride	19,000		320	mg/Kg-dry	30	12/19/2017 04:30 PM
MOISTURE						
			SW3550C			Analyst: NW
Moisture	8.4		0.050	% of sample	1	12/20/2017 03:15 PM

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

ALS Group, USA

Date: 22-Dec-17

Client: WPX Energy
Project: RDU 45 Cleanup Confirmation
Sample ID: RDU 45 S1 1'
Collection Date: 12/14/2017 11:05 AM

Work Order: 17121004
Lab ID: 17121004-02
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
			SW8015C		Prep: SW3546 12/20/17 11:21	Analyst: MEB
DRO (C10-C28)	ND		5.2	mg/Kg-dry	1	12/20/2017 08:47 PM
ORO (C28-C40)	14		5.2	mg/Kg-dry	1	12/20/2017 08:47 PM
Surr: 4-Terphenyl-d14	71.6		34-130	%REC	1	12/20/2017 08:47 PM
GASOLINE RANGE ORGANICS BY GC-FID						
			SW8015D		Prep: SW5035 12/19/17 00:00	Analyst: MEB
GRO (C6-C10)	11		5.6	mg/Kg-dry	1	12/20/2017 01:05 AM
Surr: Toluene-d8	95.1		71-123	%REC	1	12/20/2017 01:05 AM
VOLATILE ORGANIC COMPOUNDS						
			SW8260B		Prep: SW5035 12/19/17 10:26	Analyst: BG
Benzene	ND		0.034	mg/Kg-dry	1	12/21/2017 05:50 AM
Ethylbenzene	ND		0.034	mg/Kg-dry	1	12/21/2017 05:50 AM
m,p-Xylene	ND		0.068	mg/Kg-dry	1	12/21/2017 05:50 AM
o-Xylene	ND		0.034	mg/Kg-dry	1	12/21/2017 05:50 AM
Toluene	ND		0.034	mg/Kg-dry	1	12/21/2017 05:50 AM
Xylenes, Total	ND		0.10	mg/Kg-dry	1	12/21/2017 05:50 AM
Surr: 1,2-Dichloroethane-d4	90.2		70-130	%REC	1	12/21/2017 05:50 AM
Surr: 4-Bromofluorobenzene	98.9		70-130	%REC	1	12/21/2017 05:50 AM
Surr: Dibromofluoromethane	101		70-130	%REC	1	12/21/2017 05:50 AM
Surr: Toluene-d8	92.9		70-130	%REC	1	12/21/2017 05:50 AM
CHLORIDE						
			A4500-CL E-11		Prep: EXTRACT 12/18/17 15:20	Analyst: STP
Chloride	1,400		43	mg/Kg-dry	4	12/19/2017 04:30 PM
MOISTURE						
			SW3550C			Analyst: BTG
Moisture	6.1		0.050	% of sample	1	12/18/2017 09:00 AM

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

ALS Group, USA

Date: 22-Dec-17

Client: WPX Energy
Project: RDU 45 Cleanup Confirmation
Sample ID: RDU 45 S1 2'
Collection Date: 12/14/2017 11:10 AM

Work Order: 17121004
Lab ID: 17121004-03
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
			SW8015C		Prep: SW3546 12/20/17 11:21	Analyst: MEB
DRO (C10-C28)	ND		5.1	mg/Kg-dry	1	12/20/2017 09:16 PM
ORO (C28-C40)	ND		5.1	mg/Kg-dry	1	12/20/2017 09:16 PM
Surr: 4-Terphenyl-d14	85.6		34-130	%REC	1	12/20/2017 09:16 PM
GASOLINE RANGE ORGANICS BY GC-FID						
			SW8015D		Prep: SW5035 12/19/17 00:00	Analyst: MEB
GRO (C6-C10)	5.9		5.8	mg/Kg-dry	1	12/20/2017 01:35 AM
Surr: Toluene-d8	92.8		71-123	%REC	1	12/20/2017 01:35 AM
VOLATILE ORGANIC COMPOUNDS						
			SW8260B		Prep: SW5035 12/19/17 10:26	Analyst: BG
Benzene	ND		0.030	mg/Kg-dry	1	12/21/2017 06:14 AM
Ethylbenzene	ND		0.030	mg/Kg-dry	1	12/21/2017 06:14 AM
m,p-Xylene	ND		0.060	mg/Kg-dry	1	12/21/2017 06:14 AM
o-Xylene	ND		0.030	mg/Kg-dry	1	12/21/2017 06:14 AM
Toluene	ND		0.030	mg/Kg-dry	1	12/21/2017 06:14 AM
Xylenes, Total	ND		0.090	mg/Kg-dry	1	12/21/2017 06:14 AM
Surr: 1,2-Dichloroethane-d4	105		70-130	%REC	1	12/21/2017 06:14 AM
Surr: 4-Bromofluorobenzene	100		70-130	%REC	1	12/21/2017 06:14 AM
Surr: Dibromofluoromethane	103		70-130	%REC	1	12/21/2017 06:14 AM
Surr: Toluene-d8	76.1		70-130	%REC	1	12/21/2017 06:14 AM
CHLORIDE						
			A4500-CL E-11		Prep: EXTRACT 12/18/17 15:20	Analyst: STP
Chloride	390		11	mg/Kg-dry	1	12/19/2017 04:30 PM
MOISTURE						
			SW3550C			Analyst: NW
Moisture	7.3		0.050	% of sample	1	12/20/2017 03:15 PM

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

ALS Group, USA**Date:** 22-Dec-17

Client: WPX Energy
Project: RDU 45 Cleanup Confirmation
Sample ID: RDU 45 S1 4'
Collection Date: 12/14/2017 11:15 AM

Work Order: 17121004
Lab ID: 17121004-04
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CHLORIDE			A4500-CL E-11	Prep: EXTRACT	12/18/17 15:20	Analyst: STP
Chloride	1,600		42	mg/Kg-dry	4	12/19/2017 04:30 PM
MOISTURE			SW3550C			Analyst: NW
Moisture	6.1		0.050	% of sample	1	12/20/2017 03:15 PM

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

ALS Group, USA**Date:** 22-Dec-17

Client: WPX Energy
Project: RDU 45 Cleanup Confirmation
Sample ID: RDU 45 S1 6'
Collection Date: 12/14/2017 11:20 AM

Work Order: 17121004
Lab ID: 17121004-05
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CHLORIDE			A4500-CL E-11	Prep: EXTRACT 12/18/17 15:20		Analyst: STP
Chloride	68		10	mg/Kg-dry	1	12/19/2017 04:30 PM
MOISTURE			SW3550C			Analyst: NW
Moisture	4.9		0.050	% of sample	1	12/20/2017 03:15 PM

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

ALS Group, USA**Date:** 22-Dec-17

Client: WPX Energy
Project: RDU 45 Cleanup Confirmation
Sample ID: RDU 45 S1 7'
Collection Date: 12/14/2017 11:25 AM

Work Order: 17121004
Lab ID: 17121004-06
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CHLORIDE			A4500-CL E-11	Prep: EXTRACT	12/18/17 15:20	Analyst: STP
Chloride	2,300		43	mg/Kg-dry	4	12/19/2017 04:30 PM
MOISTURE			SW3550C			Analyst: NW
Moisture	6.7		0.050	% of sample	1	12/20/2017 03:15 PM

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

Client: WPX Energy
Work Order: 17121004
Project: RDU 45 Cleanup Confirmation

QC BATCH REPORT

Batch ID: **112023** Instrument ID **GC8** Method: **SW8015C**

MBLK		Sample ID: DBLKS1-112023-112023				Units: mg/Kg		Analysis Date: 12/19/2017 01:22 PM		
Client ID:		Run ID: GC8_171219A				SeqNo: 4819666		Prep Date: 12/19/2017		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	4	0	3.33	0	120	34-130	0			

LCS		Sample ID: DLCSS1-112023-112023				Units: mg/Kg		Analysis Date: 12/19/2017 01:52 PM		
Client ID:		Run ID: GC8_171219A				SeqNo: 4819667		Prep Date: 12/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	298	5.0	333	0	89.5	65-122	0			
ORO (C28-C40)	407	5.0	333	0	122	81-116	0			S
Surr: 4-Terphenyl-d14	4.65	0	3.33	0	140	34-130	0			S

MS		Sample ID: 17121000-03A MS				Units: mg/Kg		Analysis Date: 12/19/2017 02:21 PM		
Client ID:		Run ID: GC8_171219A				SeqNo: 4819668		Prep Date: 12/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	670.1	4.8	323	58.76	189	65-122	0			S
ORO (C28-C40)	552.9	4.8	323	43.85	158	81-116	0			S
Surr: 4-Terphenyl-d14	4.154	0	3.23	0	129	34-130	0			

MSD		Sample ID: 17121000-03A MSD				Units: mg/Kg		Analysis Date: 12/19/2017 02:50 PM		
Client ID:		Run ID: GC8_171219A				SeqNo: 4819671		Prep Date: 12/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	426.5	4.9	326.2	58.76	113	65-122	670.1	44.4	30	R
ORO (C28-C40)	425.7	4.9	326.2	43.85	117	81-116	552.9	26	30	S
Surr: 4-Terphenyl-d14	4.016	0	3.262	0	123	34-130	4.154	3.39	30	

The following samples were analyzed in this batch:

17121004-01A	17121004-02A	17121004-03A
--------------	--------------	--------------

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

Client: WPX Energy
 Work Order: 17121004
 Project: RDU 45 Cleanup Confirmation

QC BATCH REPORT

Batch ID: **112096** Instrument ID **GC8** Method: **SW8015C**

MBLK		Sample ID: DBLKS1-112096-112096				Units: mg/Kg		Analysis Date: 12/20/2017 11:41 A		
Client ID:		Run ID: GC8_171220A				SeqNo: 4821805		Prep Date: 12/20/2017		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

2.983

0

3.33

0

89.6

34-130

0

LCS		Sample ID: DLCSS1-112096-112096				Units: mg/Kg		Analysis Date: 12/20/2017 12:10 PM		
Client ID:		Run ID: GC8_171220A				SeqNo: 4821806		Prep Date: 12/20/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)

297.6

5.0

333

0

89.4

65-122

0

ORO (C28-C40)

409.2

5.0

333

0

123

81-116

0

S

Surr: 4-Terphenyl-d14

3.35

0

3.33

0

101

34-130

0

MS		Sample ID: 17121000-03A MS				Units: mg/Kg		Analysis Date: 12/20/2017 04:02 PM		
Client ID:		Run ID: GC8_171220A				SeqNo: 4823062		Prep Date: 12/20/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)

313.2

4.9

325.2

16.76

91.2

65-122

0

ORO (C28-C40)

389.2

4.9

325.2

5.796

118

81-116

0

S

Surr: 4-Terphenyl-d14

2.946

0

3.252

0

90.6

34-130

0

MSD		Sample ID: 17121000-03A MSD				Units: mg/Kg		Analysis Date: 12/20/2017 05:24 PM		
Client ID:		Run ID: GC8_171220A				SeqNo: 4823063		Prep Date: 12/20/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)

299.4

4.8

322.6

16.76

87.6

65-122

313.2

4.52

30

ORO (C28-C40)

371.4

4.8

322.6

5.796

113

81-116

389.2

4.67

30

Surr: 4-Terphenyl-d14

2.551

0

3.226

0

79.1

34-130

2.946

14.4

30

The following samples were analyzed in this batch:

17121004-01A

17121004-02A

17121004-03A

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

Client: WPX Energy
 Work Order: 17121004
 Project: RDU 45 Cleanup Confirmation

QC BATCH REPORT

Batch ID: **112037** Instrument ID **GC9** Method: **SW8015D**

MBLK		Sample ID: MBLK-112037-112037				Units: µg/Kg-dry		Analysis Date: 12/19/2017 05:36 PM		
Client ID:		Run ID: GC9_171219A				SeqNo: 4820367		Prep Date: 12/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	ND	5,000								
Surr: Toluene-d8	4878	0	5000	0	97.6	71-123	0			

LCS		Sample ID: LCS-112037-112037				Units: µg/Kg-dry		Analysis Date: 12/19/2017 04:37 PM		
Client ID:		Run ID: GC9_171219A				SeqNo: 4820366		Prep Date: 12/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	497100	5,000	500000	0	99.4	71-123	0			
Surr: Toluene-d8	4592	0	5000	0	91.8	71-123	0			

MS		Sample ID: 17121079-02A MS				Units: µg/Kg-dry		Analysis Date: 12/19/2017 06:06 PM		
Client ID:		Run ID: GC9_171219A				SeqNo: 4820368		Prep Date: 12/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	653600	6,200	623600	16870	102	71-123	0			
Surr: Toluene-d8	6072	0	6236	0	97.4	71-123	0			

MSD		Sample ID: 17121079-02A MSD				Units: µg/Kg-dry		Analysis Date: 12/19/2017 06:35 PM		
Client ID:		Run ID: GC9_171219A				SeqNo: 4820369		Prep Date: 12/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	706200	6,200	623600	16870	111	71-123	653600	7.74	30	
Surr: Toluene-d8	6242	0	6236	0	100	71-123	6072	2.75	30	

The following samples were analyzed in this batch:

17121004-01A	17121004-02A	17121004-03A
--------------	--------------	--------------

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

Client: WPX Energy
 Work Order: 17121004
 Project: RDU 45 Cleanup Confirmation

QC BATCH REPORT

Batch ID: **112038** Instrument ID **VMS10** Method: **SW8260B**

Sample ID: MBLK-112038-112038				Units: µg/Kg-dry			Analysis Date: 12/19/2017 04:22 PM			
Client ID:		Run ID: VMS10_171219A			SeqNo: 4820156		Prep Date: 12/19/2017		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								
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>1044</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>104</i>	<i>70-130</i>	<i>0</i>			
<i>Surr: 4-Bromofluorobenzene</i>	<i>986.5</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>98.6</i>	<i>70-130</i>	<i>0</i>			
<i>Surr: Dibromofluoromethane</i>	<i>910</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>91</i>	<i>70-130</i>	<i>0</i>			
<i>Surr: Toluene-d8</i>	<i>1000</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>100</i>	<i>70-130</i>	<i>0</i>			

LCS					Sample ID: LCS-112038-112038			Units: µg/Kg-dry		Analysis Date: 12/19/2017 10:05 A	
Client ID:			Run ID: VMS10_171219A			SeqNo: 4820155		Prep Date: 12/19/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	1090	30	1000	0	109	75-125	0				
Ethylbenzene	1067	30	1000	0	107	75-125	0				
m,p-Xylene	2154	60	2000	0	108	80-125	0				
o-Xylene	1098	30	1000	0	110	75-125	0				
Toluene	1059	30	1000	0	106	70-125	0				
Xylenes, Total	3252	90	3000	0	108	75-125	0				
Surr: 1,2-Dichloroethane-d4	1030	0	1000	0	103	70-130	0				
Surr: 4-Bromofluorobenzene	1032	0	1000	0	103	70-130	0				
Surr: Dibromofluoromethane	1021	0	1000	0	102	70-130	0				
Surr: Toluene-d8	1004	0	1000	0	100	70-130	0				

MS				Sample ID: 17121079-02A MS			Units: µg/Kg-dry		Analysis Date: 12/19/2017 06:10 PM		
Client ID:			Run ID: VMS10_171219A			SeqNo: 4820159		Prep Date: 12/19/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	1349	37	1247	0	108	75-125	0				
Ethylbenzene	1323	37	1247	3.118	106	75-125	0				
m,p-Xylene	2677	75	2494	38.66	106	80-125	0				
o-Xylene	1339	37	1247	0	107	75-125	0				
Toluene	1290	37	1247	0	103	70-125	0				
Xylenes, Total	4017	110	3742	39	106	75-125	0				
Surr: 1,2-Dichloroethane-d4	1292	0	1247	0	104	70-130	0				
Surr: 4-Bromofluorobenzene	1344	0	1247	0	108	70-130	0				
Surr: Dibromofluoromethane	1213	0	1247	0	97.2	70-130	0				
Surr: Toluene-d8	1249	0	1247	0	100	70-130	0				

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

Client: WPX Energy
 Work Order: 17121004
 Project: RDU 45 Cleanup Confirmation

QC BATCH REPORT

Batch ID: **112038** Instrument ID **VMS10** Method: **SW8260B**

MSD					Sample ID: 17121079-02A MSD			Units: µg/Kg-dry		Analysis Date: 12/19/2017 06:26 PM	
Client ID:			Run ID: VMS10_171219A			SeqNo: 4820160		Prep Date: 12/19/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	1268	37	1247	0	102	75-125	1349	6.19	30		
Ethylbenzene	1216	37	1247	3.118	97.2	75-125	1323	8.45	30		
m,p-Xylene	2531	75	2494	38.66	99.9	80-125	2677	5.63	30		
o-Xylene	1254	37	1247	0	101	75-125	1339	6.59	30		
Toluene	1198	37	1247	0	96	70-125	1290	7.37	30		
Xylenes, Total	3785	110	3742	39	100	75-125	4017	5.95	30		
Surr: 1,2-Dichloroethane-d4	1304	0	1247	0	105	70-130	1292	0.913	30		
Surr: 4-Bromofluorobenzene	1306	0	1247	0	105	70-130	1344	2.87	30		
Surr: Dibromofluoromethane	1208	0	1247	0	96.8	70-130	1213	0.412	30		
Surr: Toluene-d8	1258	0	1247	0	101	70-130	1249	0.746	30		

The following samples were analyzed in this batch:

17121004-01A	17121004-02A	17121004-03A
--------------	--------------	--------------

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

Client: WPX Energy
Work Order: 17121004
Project: RDU 45 Cleanup Confirmation

QC BATCH REPORT

Batch ID: **112009** Instrument ID **GALLERY** Method: **A4500-CI E-11**

MBLK		Sample ID: MBLK-112009-112009				Units: mg/Kg		Analysis Date: 12/19/2017 04:30 PM		
Client ID:		Run ID: GALLERY_171219D		SeqNo: 4819498		Prep Date: 12/18/2017		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: 17121003-04A MS				Units: mg/Kg		Analysis Date: 12/19/2017 04:30 PM		
Client ID:		Run ID: GALLERY_171219D		SeqNo: 4819504		Prep Date: 12/18/2017		DF: 2		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chloride 946.4 20 494.1 553.7 79.5 75-125 0

MSD		Sample ID: 17121003-04A MSD				Units: mg/Kg		Analysis Date: 12/19/2017 04:30 PM		
Client ID:		Run ID: GALLERY_171219D		SeqNo: 4819505		Prep Date: 12/18/2017		DF: 2		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chloride 1019 20 492.1 553.7 94.6 75-125 946.4 7.41 25

LCS1		Sample ID: LCS1-112009-112009				Units: mg/Kg		Analysis Date: 12/19/2017 04:30 PM		
Client ID:		Run ID: GALLERY_171219D		SeqNo: 4819514		Prep Date: 12/18/2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chloride 104.4 10 100 0 104 80-120 0

LCS2		Sample ID: LCS2-112009-112009				Units: mg/Kg		Analysis Date: 12/19/2017 04:30 PM		
Client ID:		Run ID: GALLERY_171219D		SeqNo: 4819515		Prep Date: 12/18/2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chloride 493.6 10 500 0 98.7 80-120 0

The following samples were analyzed in this batch:

17121004-01A	17121004-02A	17121004-03A
17121004-04A	17121004-05A	17121004-06A

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

Client: WPX Energy
Work Order: 17121004
Project: RDU 45 Cleanup Confirmation

QC BATCH REPORT

Batch ID: **R226757** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R226757				Units: % of sample		Analysis Date: 12/18/2017 09:00 A		
Client ID:		Run ID: MOIST_171218A				SeqNo: 4817544		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-R226757				Units: % of sample		Analysis Date: 12/18/2017 09:00 A		
Client ID:		Run ID: MOIST_171218A				SeqNo: 4817543		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: 17121004-02A DUP				Units: % of sample		Analysis Date: 12/18/2017 09:00 A		
Client ID: RDU 45 S1 1'		Run ID: MOIST_171218A				SeqNo: 4817522		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 5.98 0.050 0 0 0 0-0 6.11 2.15 10

DUP		Sample ID: 1712981-10A DUP				Units: % of sample		Analysis Date: 12/18/2017 09:00 A		
Client ID:		Run ID: MOIST_171218A				SeqNo: 4817539		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 25.2 0.050 0 0 0 0-0 24.24 3.88 10

The following samples were analyzed in this batch:

17121004-02A

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

Client: WPX Energy
 Work Order: 17121004
 Project: RDU 45 Cleanup Confirmation

QC BATCH REPORT

Batch ID: **R226975** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R226975				Units: % of sample		Analysis Date: 12/20/2017 03:15 PM		
Client ID:		Run ID: MOIST_171220A				SeqNo: 4823282		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	0.03	0.050								J

LCS		Sample ID: LCS-R226975				Units: % of sample		Analysis Date: 12/20/2017 03:15 PM		
Client ID:		Run ID: MOIST_171220A				SeqNo: 4823281		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: 17121016-01B DUP				Units: % of sample		Analysis Date: 12/20/2017 03:15 PM		
Client ID:		Run ID: MOIST_171220A				SeqNo: 4823277		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	4.84	0.050	0	0	0	0-0	4.77	1.46	10	

DUP		Sample ID: 17121016-02B DUP				Units: % of sample		Analysis Date: 12/20/2017 03:15 PM		
Client ID:		Run ID: MOIST_171220A				SeqNo: 4823279		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	6.11	0.050	0	0	0	0-0	6.17	0.977	10	

The following samples were analyzed in this batch:

17121004-01A	17121004-03A	17121004-04A
17121004-05A	17121004-06A	

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

Chain-of-Custody

Form 202r8

WORKORDER
#

17121004

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-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-NAHSO ₄ 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>Nicole Fredericks</i>	NICOLE FREDERICKS	12-15-17	1000
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				

46

Sample Receipt Checklist

Client Name: **WPX - NM**

Date/Time Received: **15-Dec-17 10:00**

Work Order: **17121004**

Received by: **NCF**

Checklist completed by Nicole Fredericks
eSignature

15-Dec-17
Date

Reviewed by: Chad Whelton
eSignature

18-Dec-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): 4.6/4.6 SR2

Cooler(s)/Kit(s):

Date/Time sample(s) sent to storage: 12/15/2017 1:36:43 PM

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: -

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction: