Mountain States ACCUTEST LABORATORIES

Reissue #1
07/24/14

Technical Report for

WPX Energy Rocky Mountain, LLC

WWLCOGJ: WPX RWF 342-33 BWQ

Accutest Job Number: D57481

Sampling Date: 05/06/14

Report to:

Western Water and Land, Inc.
743 Horizon Court Suite 330
Grand Junction, CO 80506
bsmith@westernwaterandland.com; jpahler@westernwaterandland.com

ATTN: Bruce Smith

Total number of pages in report: **56**

NELAP ACCREDITED TNI LABORATORY

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Scott Heideman
Laboratory Director

Client Service contact: Renea Jackson 303-425-6021

Certifications: CO (CO00049), ID, NE (CO00049), ND (R-027), NJ (CO 0007), OK (D9942), UT (NELAP CO00049), TX (T104704511)

Accutest Laboratories
4036 Youngfield Street
Wheat Ridge, Co 80033
Phone: 303-425-6021
Fax: 303-425-6854

July 24, 2014

Bruce Smith
Western Water and Land, Inc.
743 Horizon Court Suite 330
Grand Junction, CO 80506

Subject: Report Reissue for Accutest Job: D57481

Dear Mr. Smith:

Per the request from your office, Accutest Laboratories has looked into the Chloride not showing on the PDF but only the EDD. The problem has been fixed and data now appears on both the EDD and the PDF. The report has been reissued with this correction. Please accept our apologies for these errors.

Any questions or concerns should be directed to the undersigned at 303-425-6021.

Sincerely,

Scott Heideman
Laboratory Director

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Sample Summary

WPX Energy Rocky Mountain, LLC

Job No: D57481

WWLCOGJ: WPX RWF 342-33 BWQ

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
D57481-1	05/06/14	13:10	SK	05/07/14	AQ	Surface Water	TRAHERN SPG
D57481-1F	05/06/14	13:10	SK	05/07/14	AQ	Surface H2O Filtered	TRAHERN SPG
D57481-2	05/06/14	15:25	SK	05/07/14	AQ	Surface Water	HAYNES SPG
D57481-2F	05/06/14	15:25	SK	05/07/14	AQ	Surface H2O Filtered	HAYNES SPG
D57481-3	05/06/14	00:00	SK	05/07/14	AQ	Trip Blank Water	TB1,TB2

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	WPX Energy Rocky Mountain, LLC	**Job No**	D57481
Site:	WWLCOGJ: WPX RWF 342-33 BWQ	**Report Date**	5/21/2014 11:21:00 A

On 05/07/2014, 2 sample(s), 1 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 2 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D57481 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix: AQ **Batch ID:** V6V1396

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D57451-17MS, D57480-2DUP were used as the QC samples indicated.

Volatiles by GC By Method RSK175 MOD

Matrix: AQ **Batch ID:** GFB508

- All samples were analyzed within the recommended method holding time.
- Sample(s) D57479-1MS, D57479-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- D57481-1, -2: Sample was not preserved to a pH < 2.

Extractables by GC By Method SW846-8015B

Matrix: AQ **Batch ID:** OP9893

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D57451-13MS, D57451-13MSD were used as the QC samples indicated.
- The matrix spike duplicate (MSD) recovery(s) of TPH-DRO (C10-C28) are outside control limits. Probable cause due to matrix interference.
- The RPD(s) for the MS and MSD recoveries of TPH-DRO (C10-C28) are outside control limits for sample OP9893-MSD. High RPD due to possible sample nonhomogeneity.

Metals By Method EPA 200.7

Matrix: AQ **Batch ID:** MP12869

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D57479-1FMS, D57479-1FMSD were used as the QC samples for the metals analysis.

Metals By Method EPA 200.8

Matrix: AQ **Batch ID:** MP12868

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D57443-1FAMS, D57443-1FAMSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method EPA 300.0/SW846 9056

Matrix: AQ **Batch ID:** GP12524

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D57481-2MS, D57481-2MSD were used as the QC samples for the Bromide, Chloride, Fluoride, Nitrogen, Nitrate, Nitrogen, Nitrite, Sulfate analysis.
- D57481-1, -2 for Nitrogen, Nitrite: Elevated detection limit/MDL due to matrix interference.

Wet Chemistry By Method HACH IRB-BART

Matrix: AQ **Batch ID:** MB362

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Wet Chemistry By Method HACH SLYM-BART

Matrix: AQ **Batch ID:** MB363

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Wet Chemistry By Method HACH SRB-BART

Matrix: AQ **Batch ID:** MB364

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Wet Chemistry By Method HACH8190/SM4500P-B/E

Matrix: AQ **Batch ID:** GP12550

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D57444-1DUP, D57444-1MS, D57444-1MSD were used as the QC samples for the Phosphorus, Total analysis.

Wet Chemistry By Method SM 2320B-2011

Matrix: AQ **Batch ID:** GN24752

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D57802-2DUP, D57802-2MS, D57802-2MSD were used as the QC samples for the Alkalinity, Total as CaCO3 analysis.

Matrix: AQ **Batch ID:** GN24755

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Matrix: AQ **Batch ID:** GN24756

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Wet Chemistry By Method SM 2510B-2011

Matrix: AQ **Batch ID:** GP12559

- Sample(s) D57452-1DUP were used as the QC samples for the Specific Conductivity analysis.

Wet Chemistry By Method SM 2540C-2011

Matrix: AQ **Batch ID:** GN24644

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D57440-2DUP were used as the QC samples for the Solids, Total Dissolved analysis.

Wet Chemistry By Method SM4500HB+-2011/9040C

Matrix: AQ **Batch ID:** GN24623

- The following samples were run outside of holding time for method SM4500HB+-2011/9040C: D57481-1, D57481-2

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

Summary of Hits

Job Number: D57481
Account: WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ
Collected: 05/06/14

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
D57481-1	**TRAHERN SPG**					
Alkalinity, Bicarbonate as CaCO3		387	5.0	2.0	mg/l	SM 2320B-2011
Alkalinity, Total as CaCO3		387	5.0	2.0	mg/l	SM 2320B-2011
Bromide		0.27	0.10	0.050	mg/l	EPA 300.0/SW846 9056
Chloride		25.9	1.0	0.80	mg/l	EPA 300.0/SW846 9056
Fluoride		0.40	0.20	0.10	mg/l	EPA 300.0/SW846 9056
Iron Reducing Bacteria		74500	25		CFU/ml	HACH IRB-BART
Nitrogen, Nitrate		0.69	0.020	0.012	mg/l	EPA 300.0/SW846 9056
Phosphorus, Total		0.056	0.010	0.0080	mg/l	HACH8190/SM4500P-B/E
Slime Forming Bacteria		12500	500		CFU/ml	HACH SLYM-BART
Solids, Total Dissolved		620	10	5.0	mg/l	SM 2540C-2011
Specific Conductivity		870	1.0		umhos/cm	SM 2510B-2011
Sulfate		115	5.0	2.0	mg/l	EPA 300.0/SW846 9056
Sulfate Reducing Bacteria		18000	200		CFU/ml	HACH SRB-BART
pH		8.58			su	SM4500HB+-2011/9040C
D57481-1F	**TRAHERN SPG**					
Barium		53.1	10	1.4	ug/l	EPA 200.7
Boron		181	50	6.6	ug/l	EPA 200.7
Calcium		56400	400	66	ug/l	EPA 200.7
Magnesium		46100	200	29	ug/l	EPA 200.7
Manganese		2.1 J	5.0	0.29	ug/l	EPA 200.7
Potassium		4710	1000	230	ug/l	EPA 200.7
Selenium		4.1	0.80	0.42	ug/l	EPA 200.8
Sodium		97800	400	36	ug/l	EPA 200.7
Strontium		763	5.0	0.12	ug/l	EPA 200.7
D57481-2	**HAYNES SPG**					
Methane [a]		0.00094	0.00080	0.00040	mg/l	RSK175 MOD
Alkalinity, Bicarbonate as CaCO3		415	5.0	2.0	mg/l	SM 2320B-2011
Alkalinity, Total as CaCO3		415	5.0	2.0	mg/l	SM 2320B-2011
Bromide		0.17	0.10	0.050	mg/l	EPA 300.0/SW846 9056
Chloride		20.0	2.5	2.0	mg/l	EPA 300.0/SW846 9056
Fluoride		0.27	0.20	0.10	mg/l	EPA 300.0/SW846 9056
Iron Reducing Bacteria		9000	25		CFU/ml	HACH IRB-BART
Nitrogen, Nitrate		0.98	0.050	0.030	mg/l	EPA 300.0/SW846 9056
Phosphorus, Total		0.066	0.010	0.0080	mg/l	HACH8190/SM4500P-B/E
Slime Forming Bacteria		12500	500		CFU/ml	HACH SLYM-BART
Solids, Total Dissolved		604	10	5.0	mg/l	SM 2540C-2011
Specific Conductivity		889	1.0		umhos/cm	SM 2510B-2011
Sulfate		94.3	2.5	1.0	mg/l	EPA 300.0/SW846 9056
Sulfate Reducing Bacteria		18000	200		CFU/ml	HACH SRB-BART

Summary of Hits

Job Number: D57481
Account: WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ
Collected: 05/06/14

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
pH		7.61			su	SM4500HB+-2011/9040C
D57481-2F	**HAYNES SPG**					
Barium		88.6	10	1.4	ug/l	EPA 200.7
Boron		81.1	50	6.6	ug/l	EPA 200.7
Calcium		77500	400	66	ug/l	EPA 200.7
Magnesium		54600	200	29	ug/l	EPA 200.7
Manganese		0.30 J	5.0	0.29	ug/l	EPA 200.7
Potassium		4430	1000	230	ug/l	EPA 200.7
Selenium		2.9	0.80	0.42	ug/l	EPA 200.8
Sodium		67100	400	36	ug/l	EPA 200.7
Strontium		812	5.0	0.12	ug/l	EPA 200.7
D57481-3	**TB1,TB2**					

No hits reported in this sample.

(a) Sample was not preserved to a pH < 2.

Mountain States ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	TRAHERN SPG		
Lab Sample ID:	D57481-1	**Date Sampled:**	05/06/14
Matrix:	AQ - Surface Water	**Date Received:**	05/07/14
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	WWLCOGJ: WPX RWF 342-33 BWQ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6V24660.D	1	05/07/14	JL	n/a	n/a	V6V1396
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics + GRO

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	2.0	1.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.31	ug/l	
1330-20-7	Xylene (total)	ND	3.0	1.5	ug/l	
	TPH-GRO (C6-C10)	ND	200	200	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	98%		62-130%
2037-26-5	Toluene-D8	97%		70-130%
460-00-4	4-Bromofluorobenzene	87%		69-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRAHERN SPG		
Lab Sample ID:	D57481-1	**Date Sampled:**	05/06/14
Matrix:	AQ - Surface Water	**Date Received:**	05/07/14
Method:	RSK175 MOD	**Percent Solids:**	n/a
Project:	WWLCOGJ: WPX RWF 342-33 BWQ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	FB11117.D	1	05/08/14	JS	n/a	n/a	GFB508
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	39.0 ml	4.0 ml	500 ul	20.0 Deg. C
Run #2				

Methane, Ethane and Propane

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.00080	0.00040	mg/l	
74-84-0	Ethane	ND	0.0016	0.00080	mg/l	
74-98-6	Propane	ND	0.0022	0.0011	mg/l	

(a) Sample was not preserved to a pH < 2.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRAHERN SPG		
Lab Sample ID:	D57481-1	**Date Sampled:**	05/06/14
Matrix:	AQ - Surface Water	**Date Received:**	05/07/14
Method:	SW846-8015B SW846 3510C	**Percent Solids:**	n/a
Project:	WWLCOGJ: WPX RWF 342-33 BWQ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD31284.D	1	05/13/14	JS	05/13/14	OP9893	GFD1503
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.19	0.17	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	69%		10-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TRAHERN SPG
Lab Sample ID: D57481-1
Matrix: AQ - Surface Water
Project: WWLCOGJ: WPX RWF 342-33 BWQ

Date Sampled: 05/06/14
Date Received: 05/07/14
Percent Solids: n/a

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate as CaC	387	5.0	2.0	mg/l	1	05/19/14	BF	SM 2320B-2011
Alkalinity, Carbonate	2.0 U	5.0	2.0	mg/l	1	05/19/14	BF	SM 2320B-2011
Alkalinity, Total as CaCO3	387	5.0	2.0	mg/l	1	05/19/14	BF	SM 2320B-2011
Bromide	0.27	0.10	0.050	mg/l	2	05/07/14 14:43	JB	EPA 300.0/SW846 9056
Chloride	25.9	1.0	0.80	mg/l	2	05/07/14 14:43	JB	EPA 300.0/SW846 9056
Fluoride	0.40	0.20	0.10	mg/l	2	05/07/14 14:43	JB	EPA 300.0/SW846 9056
Iron Reducing Bacteria	74500	25		CFU/ml	1	05/07/14	MM	HACH IRB-BART
Nitrogen, Nitrate	0.69	0.020	0.012	mg/l	2	05/07/14 14:43	JB	EPA 300.0/SW846 9056
Nitrogen, Nitrite [a]	0.0060 U	0.0080	0.0060	mg/l	2	05/07/14 14:43	JB	EPA 300.0/SW846 9056
Phosphorus, Total	0.056	0.010	0.0080	mg/l	1	05/12/14	BF	HACH8190/SM4500P-B/E
Slime Forming Bacteria	12500	500		CFU/ml	1	05/07/14	MM	HACH SLYM-BART
Solids, Total Dissolved	620	10	5.0	mg/l	1	05/12/14	RW	SM 2540C-2011
Specific Conductivity	870	1.0		umhos/cm	1	05/13/14	AK	SM 2510B-2011
Sulfate	115	5.0	2.0	mg/l	10	05/07/14 19:20	JB	EPA 300.0/SW846 9056
Sulfate Reducing Bacteria	18000	200		CFU/ml	1	05/07/14	MM	HACH SRB-BART
pH	8.58			su	1	05/08/14 14:55	SK	SM4500HB+-2011/9040C

(a) Elevated detection limit/MDL due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: TRAHERN SPG
Lab Sample ID: D57481-1F
Matrix: AQ - Surface H2O Filtered
Project: WWLCOGJ: WPX RWF 342-33 BWQ

Date Sampled: 05/06/14
Date Received: 05/07/14
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Barium	53.1	10	1.4	ug/l	1	05/08/14	05/09/14	KV	EPA 200.7 [1]	EPA 200.7 [4]
Boron	181	50	6.6	ug/l	1	05/08/14	05/09/14	KV	EPA 200.7 [1]	EPA 200.7 [4]
Calcium	56400	400	66	ug/l	1	05/08/14	05/09/14	KV	EPA 200.7 [1]	EPA 200.7 [4]
Iron	3.2 U	10	3.2	ug/l	1	05/08/14	05/09/14	KV	EPA 200.7 [1]	EPA 200.7 [4]
Magnesium	46100	200	29	ug/l	1	05/08/14	05/09/14	KV	EPA 200.7 [1]	EPA 200.7 [4]
Manganese	2.1 J	5.0	0.29	ug/l	1	05/08/14	05/09/14	KV	EPA 200.7 [1]	EPA 200.7 [4]
Potassium	4710	1000	230	ug/l	1	05/08/14	05/09/14	KV	EPA 200.7 [1]	EPA 200.7 [4]
Selenium	4.1	0.80	0.42	ug/l	2	05/08/14	05/20/14	NT	EPA 200.8 [2]	EPA 200.8 [3]
Sodium	97800	400	36	ug/l	1	05/08/14	05/09/14	KV	EPA 200.7 [1]	EPA 200.7 [4]
Strontium	763	5.0	0.12	ug/l	1	05/08/14	05/09/14	KV	EPA 200.7 [1]	EPA 200.7 [4]

(1) Instrument QC Batch: MA4747
(2) Instrument QC Batch: MA4783
(3) Prep QC Batch: MP12868
(4) Prep QC Batch: MP12869

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	HAYNES SPG		
Lab Sample ID:	D57481-2	**Date Sampled:**	05/06/14
Matrix:	AQ - Surface Water	**Date Received:**	05/07/14
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	WWLCOGJ: WPX RWF 342-33 BWQ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6V24661.D	1	05/07/14	JL	n/a	n/a	V6V1396
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics + GRO

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	2.0	1.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.31	ug/l	
1330-20-7	Xylene (total)	ND	3.0	1.5	ug/l	
	TPH-GRO (C6-C10)	ND	200	200	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	103%		62-130%
2037-26-5	Toluene-D8	96%		70-130%
460-00-4	4-Bromofluorobenzene	87%		69-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	HAYNES SPG		
Lab Sample ID:	D57481-2	**Date Sampled:**	05/06/14
Matrix:	AQ - Surface Water	**Date Received:**	05/07/14
Method:	RSK175 MOD	**Percent Solids:**	n/a
Project:	WWLCOGJ: WPX RWF 342-33 BWQ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	FB11118.D	1	05/08/14	JS	n/a	n/a	GFB508
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	39.0 ml	4.0 ml	500 ul	20.0 Deg. C
Run #2				

Methane, Ethane and Propane

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	0.00094	0.00080	0.00040	mg/l	
74-84-0	Ethane	ND	0.0016	0.00080	mg/l	
74-98-6	Propane	ND	0.0022	0.0011	mg/l	

(a) Sample was not preserved to a pH < 2.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: HAYNES SPG
Lab Sample ID: D57481-2
Matrix: AQ - Surface Water
Method: SW846-8015B SW846 3510C
Project: WWLCOGJ: WPX RWF 342-33 BWQ

Date Sampled: 05/06/14
Date Received: 05/07/14
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD31286.D	1	05/13/14	JS	05/13/14	OP9893	GFD1503
Run #2							

	Initial Volume	Final Volume
Run #1	1060 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.19	0.17	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	35%		10-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: HAYNES SPG
Lab Sample ID: D57481-2
Matrix: AQ - Surface Water
Project: WWLCOGJ: WPX RWF 342-33 BWQ

Date Sampled: 05/06/14
Date Received: 05/07/14
Percent Solids: n/a

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate as CaC	415	5.0	2.0	mg/l	1	05/19/14	BF	SM 2320B-2011
Alkalinity, Carbonate	2.0 U	5.0	2.0	mg/l	1	05/19/14	BF	SM 2320B-2011
Alkalinity, Total as CaCO3	415	5.0	2.0	mg/l	1	05/19/14	BF	SM 2320B-2011
Bromide	0.17	0.10	0.050	mg/l	2	05/07/14 14:56	JB	EPA 300.0/SW846 9056
Chloride	20.0	2.5	2.0	mg/l	5	05/07/14 19:59	JB	EPA 300.0/SW846 9056
Fluoride	0.27	0.20	0.10	mg/l	2	05/07/14 14:56	JB	EPA 300.0/SW846 9056
Iron Reducing Bacteria	9000	25		CFU/ml	1	05/07/14	MM	HACH IRB-BART
Nitrogen, Nitrate	0.98	0.050	0.030	mg/l	5	05/07/14 19:59	JB	EPA 300.0/SW846 9056
Nitrogen, Nitrite [a]	0.0060 U	0.0080	0.0060	mg/l	2	05/07/14 14:56	JB	EPA 300.0/SW846 9056
Phosphorus, Total	0.066	0.010	0.0080	mg/l	1	05/12/14	BF	HACH8190/SM4500P-B/E
Slime Forming Bacteria	12500	500		CFU/ml	1	05/07/14	MM	HACH SLYM-BART
Solids, Total Dissolved	604	10	5.0	mg/l	1	05/12/14	RW	SM 2540C-2011
Specific Conductivity	889	1.0		umhos/cm	1	05/13/14	AK	SM 2510B-2011
Sulfate	94.3	2.5	1.0	mg/l	5	05/07/14 19:59	JB	EPA 300.0/SW846 9056
Sulfate Reducing Bacteria	18000	200		CFU/ml	1	05/07/14	MM	HACH SRB-BART
pH	7.61			su	1	05/08/14 14:55	SK	SM4500HB+-2011/9040C

(a) Elevated detection limit/MDL due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: HAYNES SPG
Lab Sample ID: D57481-2F
Matrix: AQ - Surface H2O Filtered
Project: WWLCOGJ: WPX RWF 342-33 BWQ

Date Sampled: 05/06/14
Date Received: 05/07/14
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Barium	88.6	10	1.4	ug/l	1	05/08/14	05/09/14	KV	EPA 200.7 [1]	EPA 200.7 [4]
Boron	81.1	50	6.6	ug/l	1	05/08/14	05/09/14	KV	EPA 200.7 [1]	EPA 200.7 [4]
Calcium	77500	400	66	ug/l	1	05/08/14	05/09/14	KV	EPA 200.7 [1]	EPA 200.7 [4]
Iron	3.2 U	10	3.2	ug/l	1	05/08/14	05/09/14	KV	EPA 200.7 [1]	EPA 200.7 [4]
Magnesium	54600	200	29	ug/l	1	05/08/14	05/09/14	KV	EPA 200.7 [1]	EPA 200.7 [4]
Manganese	0.30 J	5.0	0.29	ug/l	1	05/08/14	05/09/14	KV	EPA 200.7 [1]	EPA 200.7 [4]
Potassium	4430	1000	230	ug/l	1	05/08/14	05/09/14	KV	EPA 200.7 [1]	EPA 200.7 [4]
Selenium	2.9	0.80	0.42	ug/l	2	05/08/14	05/20/14	NT	EPA 200.8 [2]	EPA 200.8 [3]
Sodium	67100	400	36	ug/l	1	05/08/14	05/09/14	KV	EPA 200.7 [1]	EPA 200.7 [4]
Strontium	812	5.0	0.12	ug/l	1	05/08/14	05/09/14	KV	EPA 200.7 [1]	EPA 200.7 [4]

(1) Instrument QC Batch: MA4747
(2) Instrument QC Batch: MA4783
(3) Prep QC Batch: MP12868
(4) Prep QC Batch: MP12869

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	TB1,TB2		
Lab Sample ID:	D57481-3	**Date Sampled:**	05/06/14
Matrix:	AQ - Trip Blank Water	**Date Received:**	05/07/14
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	WWLCOGJ: WPX RWF 342-33 BWQ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6V24662.D	1	05/07/14	JL	n/a	n/a	V6V1396
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics + GRO

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	2.0	1.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.31	ug/l	
1330-20-7	Xylene (total)	ND	3.0	1.5	ug/l	
	TPH-GRO (C6-C10)	ND	200	200	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	99%		62-130%
2037-26-5	Toluene-D8	95%		70-130%
460-00-4	4-Bromofluorobenzene	86%		69-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Mountain States ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

ACCUTEST LABORATORIES

4036 Youngfield Street, Wheat Ridge, CO 80033
TEL. 303-425-6021 FAX: 303-425-6854
www.accutest.com

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FED-EX Tracking #: | Bottle Order Control #:
Accutest Quote #: JMS-2013-245 | Accutest Job #: D57481

Client / Reporting Information

Company Name: Western Water and Land, Inc.
Street Address: 743 Horizon Ct., Suite 330
City: Grand Junction, State: CO 81506
Project Contact: Bruce Smith bsmith@westernwaterandland.com
Phone #: (970) 242-0170
Sampler(s) Name(s): Shelby Kipp

Project Information

Project Name: RWF 342-33 BWQ
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name: WPX Energy
Street Address: 1058 CR 215
City: Parachute, CO
Attention: Brandon Danforth

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	PH, SCON, TDS	XCARBICALK	BRO, CHL, F, NO2, NO30, SO4	TPO4	*Dissolved Metals - Lab Filtered	VRSK175DGMEP	V8260BTXGRO	B8015DRO	BART	**Isotopic Methane	LAB USE ONLY
	Trahern Spg		5-6-14	1310	SLK	SW	15	3			1	11				1	1	1	1	1	3	3	2	1	1	01
	Haynes Spg		5-6-14	1525	SLK	SW	15	3			1	11				1	1	1	1	1	3	3	2	1	1	02
	TB1, TB2																					X				03
																										5-7-14 954
	Trahern Spg		Field Parameters: pH(s.u.): 8.57		Temp(°C): 12.7		Sp.Cond(uS/cm): 958					DO(%): 82.0		DO(mg/L) 8.65		ORP(mv): 92.3		TURB(NTU): 3.24 (averaged)							
	Haynes Spg		Field Parameters: pH(s.u.): 7.41		Temp(°C): 12.0		Sp.Cond(uS/cm): 974					DO(%): 61.4		DO(mg/L) 4.58		ORP(mv): 87.6		TURB(NTU): 0.50 (averaged)							

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Turnaround Time (Business days)

- [x] Std. 15 Business Days
- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day Emergency
- [ ] 2 Day Emergency
- [ ] 1 Day Emergency
- [ ]

Approved By (Accutest PM): / Date:

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] COMMBN
- [ ] COMMBN+
- [ ]
- [ ] State Forms Required
- [ ] Send Forms to State
- [ ] Report by Fax
- [ ] Report by PDF
- [x] EDD Format

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial BN = Results/QC/Narrative (+ = chromatograms)

Comments / Special Instructions

*Dissolved Metals (200.7/200.8): Ba, B, Ca, Fe, Mg, Mn, K, SeMS, Na, Sr

**Hold pending RSK175 results

analyze trip blanks.

Relinquished by Sampler:	Received By:	Relinquished By:	Date Time:	Received By:
1 Shelby Kipp 5-6-14 @ 1630	1 Pilot Service Center	2 CO		2 5-7-14 1200
3	3	4		4
5	5	Custody Seal #	Intact / Not Intact	Preserved where applicable: On Ice: Cooler Temp. 2.0

D57481: Chain of Custody
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Mountain States ACCUTEST LABORATORIES

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D57481
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6V1396-MB	6V24652.D	1	05/07/14	JL	n/a	n/a	V6V1396

The QC reported here applies to the following samples: **Method:** SW846 8260B

D57481-1, D57481-2, D57481-3

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.31	ug/l	
108-88-3	Toluene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	3.0	1.5	ug/l	
	TPH-GRO (C6-C10)	ND	200	200	ug/l	

CAS No.	Surrogate Recoveries		Limits
17060-07-0	1,2-Dichloroethane-D4	93%	62-130%
2037-26-5	Toluene-D8	97%	70-130%
460-00-4	4-Bromofluorobenzene	89%	69-130%

Blank Spike Summary

Job Number: D57481
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6V1396-BS	6V24654.D	1	05/07/14	JL	n/a	n/a	V6V1396

The QC reported here applies to the following samples: **Method:** SW846 8260B

D57481-1, D57481-2, D57481-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	46.2	92	70-130
100-41-4	Ethylbenzene	50	46.6	93	70-130
108-88-3	Toluene	50	47.2	94	70-130
1330-20-7	Xylene (total)	150	144	96	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	94%	62-130%
2037-26-5	Toluene-D8	95%	70-130%
460-00-4	4-Bromofluorobenzene	93%	69-130%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: D57481
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6V1396-BS	6V24655.D	1	05/07/14	JL	n/a	n/a	V6V1396

The QC reported here applies to the following samples: **Method:** SW846 8260B

D57481-1, D57481-2, D57481-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
	TPH-GRO (C6-C10)	2200	1900	86	39-144

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	95%	62-130%
2037-26-5	Toluene-D8	95%	70-130%
460-00-4	4-Bromofluorobenzene	92%	69-130%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: D57481
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D57451-17MS	6V24666A.D	25	05/08/14	JL	n/a	n/a	V6V1396
D57451-17	6V24668A.D	25	05/08/14	JL	n/a	n/a	V6V1396

The QC reported here applies to the following samples: **Method:** SW846 8260B

D57481-1, D57481-2, D57481-3

CAS No.	Compound	D57451-17 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
71-43-2	Benzene	ND		1250	1030	82	62-130
100-41-4	Ethylbenzene	ND		1250	1080	86	63-130
108-88-3	Toluene	ND		1250	1090	87	60-130
1330-20-7	Xylene (total)	ND		3750	3350	89	67-130

CAS No.	Surrogate Recoveries	MS	D57451-17	Limits
17060-07-0	1,2-Dichloroethane-D4	96%	99%	62-130%
2037-26-5	Toluene-D8	97%	97%	70-130%
460-00-4	4-Bromofluorobenzene	94%	88%	69-130%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: D57481
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D57451-17MS	6V24667A.D	25	05/08/14	JL	n/a	n/a	V6V1396
D57451-17	6V24668A.D	25	05/08/14	JL	n/a	n/a	V6V1396

The QC reported here applies to the following samples: **Method:** SW846 8260B

D57481-1, D57481-2, D57481-3

CAS No.	Compound	D57451-17 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
	TPH-GRO (C6-C10)	ND		55000	42100	77	19-168

CAS No.	Surrogate Recoveries	MS	D57451-17	Limits
17060-07-0	1,2-Dichloroethane-D4	94%	99%	62-130%
2037-26-5	Toluene-D8	96%	97%	70-130%
460-00-4	4-Bromofluorobenzene	91%	88%	69-130%

* = Outside of Control Limits.

Duplicate Summary

Job Number: D57481
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D57480-2DUP	6V24658.D	1	05/07/14	JL	n/a	n/a	V6V1396
D57480-2	6V24657.D	1	05/07/14	JL	n/a	n/a	V6V1396

The QC reported here applies to the following samples: **Method:** SW846 8260B

D57481-1, D57481-2, D57481-3

CAS No.	Compound	D57480-2 ug/l	Q	DUP ug/l	Q	RPD	Limits
71-43-2	Benzene	ND		ND		nc	30
100-41-4	Ethylbenzene	ND		ND		nc	30
108-88-3	Toluene	ND		ND		nc	30
1330-20-7	Xylene (total)	ND		ND		nc	30
	TPH-GRO (C6-C10)	ND		ND		nc	30

CAS No.	Surrogate Recoveries	DUP	D57480-2	Limits
17060-07-0	1,2-Dichloroethane-D4	98%	100%	62-130%
2037-26-5	Toluene-D8	95%	97%	70-130%
460-00-4	4-Bromofluorobenzene	88%	91%	69-130%

* = Outside of Control Limits.

Mountain States ACCUTEST LABORATORIES

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D57481
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GFB508-MB	FB11108.D	1	05/08/14	JS	n/a	n/a	GFB508

The QC reported here applies to the following samples: **Method:** RSK175 MOD

D57481-1, D57481-2

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.00080	0.00040	mg/l	
74-84-0	Ethane	ND	0.0016	0.00080	mg/l	
74-98-6	Propane	ND	0.0022	0.0011	mg/l	

Blank Spike Summary

Job Number: D57481
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GFB508-BS	FB11109.D	10	05/08/14	JS	n/a	n/a	GFB508

The QC reported here applies to the following samples: **Method:** RSK175 MOD

D57481-1, D57481-2

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
74-82-8	Methane	0.51	0.608	119	70-130
74-84-0	Ethane	0.956	1.04	109	70-130
74-98-6	Propane	1.4	1.52	108	67-130

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D57481
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D57479-1MS	FB11111.D	10	05/08/14	JS	n/a	n/a	GFB508
D57479-1MSD	FB11112.D	10	05/08/14	JS	n/a	n/a	GFB508
D57479-1	FB11110.D	1	05/08/14	JS	n/a	n/a	GFB508

The QC reported here applies to the following samples: **Method:** RSK175 MOD

D57481-1, D57481-2

CAS No.	Compound	D57479-1 mg/l	Q	Spike mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
74-82-8	Methane	0.00040		0.51	0.512	100	0.51	0.511	100	0	51-155/30
74-84-0	Ethane	ND		0.956	0.893	93	0.956	0.897	94	0	58-130/30
74-98-6	Propane	ND		1.4	1.33	95	1.4	1.35	96	1	46-130/30

* = Outside of Control Limits.

Mountain States ACCUTEST LABORATORIES

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D57481
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9893-MB	FD31266.D	1	05/13/14	JS	05/13/14	OP9893	GFD1503

The QC reported here applies to the following samples: **Method:** SW846-8015B

D57481-1, D57481-2

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.20	0.18	mg/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	50%	10-130%

Blank Spike Summary

Job Number: D57481
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9893-BS	FD31268.D	1	05/13/14	JS	05/13/14	OP9893	GFD1503

The QC reported here applies to the following samples: **Method:** SW846-8015B

D57481-1, D57481-2

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH-DRO (C10-C28)	5	1.67	33	33-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	46%	10-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D57481
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9893-MS	FD31270.D	1	05/13/14	JS	05/13/14	OP9893	GFD1503
OP9893-MSD	FD31272.D	1	05/13/14	JS	05/13/14	OP9893	GFD1503
D57451-13	FD31274.D	1	05/13/14	JS	05/13/14	OP9893	GFD1503

The QC reported here applies to the following samples: **Method:** SW846-8015B

D57481-1, D57481-2

CAS No.	Compound	D57451-13 mg/l	Q	Spike mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	ND		5	2.32	46	5	1.20	24* [a]	64* [b]	33-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D57451-13	Limits
84-15-1	o-Terphenyl	67%	31%	46%	10-130%

(a) Outside control limits due to possible matrix interference.
(b) High RPD due to possible sample nonhomogeneity.

* = Outside of Control Limits.

Mountain States ACCUTEST LABORATORIES

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D57481
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

QC Batch ID: MP12868
Matrix Type: AQUEOUS

Methods: EPA 200.8
Units: ug/l

Prep Date: 05/08/14

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	1.1	2		
Antimony	0.40	.0022	.011		
Arsenic	0.20	.017	.044		
Barium	2.0	.016	.079		
Beryllium	0.20	.016	.069		
Boron	40	.49	2.1		
Cadmium	0.10	.036	.042		
Calcium	400	5.6	12		
Chromium	2.0	.053	.053		
Cobalt	0.20	.0049	.015		
Copper	2.0	.06	.13		
Iron	10	3.5	4.6		
Lead	0.50	.0079	.008		
Magnesium	100	1.3	1.3		
Manganese	1.0	.12	.13		
Molybdenum	1.0	.049	.029		
Nickel	2.0	.0088	.027		
Phosphorus	60	2.6	4.3		
Potassium	200	2.9	2.9		
Selenium	0.40	.06	.21	0.0020	<0.40
Silver	0.10	.0019	.008		
Sodium	500	4.9	4.9		
Strontium	20	.01	.015		
Thallium	0.20	.0024	.005		
Tin	10	.063	1.3		
Titanium	2.0	.059	.092		
Uranium	0.20	.0017	.002		
Vanadium	1.0	.037	.2		
Zinc	10	.21	.96		

Associated samples MP12868: D57481-1F, D57481-2F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D57481
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

QC Batch ID: MP12868
Matrix Type: AQUEOUS

Methods: EPA 200.8
Units: ug/l

Prep Date: 05/08/14

Metal	D57443-1FA Original MS		Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony	anr				
Arsenic	anr				
Barium	anr				
Beryllium	anr				
Boron					
Cadmium	anr				
Calcium					
Chromium	anr				
Cobalt					
Copper	anr				
Iron					
Lead	anr				
Magnesium					
Manganese	anr				
Molybdenum	anr				
Nickel	anr				
Phosphorus					
Potassium					
Selenium	0.35	197	200	98.3	70-130
Silver	anr				
Sodium	anr				
Strontium					
Thallium	anr				
Tin					
Titanium					
Uranium	anr				
Vanadium					
Zinc	anr				

Associated samples MP12868: D57481-1F, D57481-2F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D57481
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

QC Batch ID: MP12868 Methods: EPA 200.8
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 05/08/14

Metal	D57443-1FA Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony	anr					
Arsenic	anr					
Barium	anr					
Beryllium	anr					
Boron						
Cadmium	anr					
Calcium						
Chromium	anr					
Cobalt						
Copper	anr					
Iron						
Lead	anr					
Magnesium						
Manganese	anr					
Molybdenum	anr					
Nickel	anr					
Phosphorus						
Potassium						
Selenium	0.35	196	200	97.8	0.5	20
Silver	anr					
Sodium	anr					
Strontium						
Thallium	anr					
Tin						
Titanium						
Uranium	anr					
Vanadium						
Zinc	anr					

Associated samples MP12868: D57481-1F, D57481-2F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D57481
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

QC Batch ID: MP12868
Matrix Type: AQUEOUS

Methods: EPA 200.8
Units: ug/l

Prep Date: 05/08/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron				
Lead	anr			
Magnesium				
Manganese	anr			
Molybdenum	anr			
Nickel	anr			
Phosphorus				
Potassium				
Selenium	207	200	103.5	85-115
Silver	anr			
Sodium	anr			
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium	anr			
Vanadium				
Zinc	anr			

Associated samples MP12868: D57481-1F, D57481-2F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D57481
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

QC Batch ID: MP12869
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 05/08/14

Metal	RL	IDL	MDL	MB raw	final
Aluminum	100	8.6	11		
Antimony	30	3.2	21		
Arsenic	25	5.2	9		
Barium	10	1.4	1.4	0.0	<10
Beryllium	10	.8	1.7		
Boron	50	6.7	6.6	0.80	<50
Cadmium	10	.4	.36		
Calcium	400	2.2	66	8.3	<400
Chromium	10	.4	1.4		
Cobalt	5.0	.4	.51		
Copper	10	1.2	1.5		
Iron	10	2.2	3.2	3.0	<10
Lead	50	3.6	4.1		
Lithium	5.0	1.9	1.9		
Magnesium	200	14	29	-2.5	<200
Manganese	5.0	.01	.29	0.20	<5.0
Molybdenum	10	.8	1.1		
Nickel	30	.9	.87		
Phosphorus	100	15	24		
Potassium	1000	130	230	11.1	<1000
Selenium	50	8.8	9.3		
Silicon	50	5.2	5.6		
Silver	30	.4	.4		
Sodium	400	4.9	36	18.3	<400
Strontium	5.0	.01	.12	0.0	<5.0
Thallium	10	2.9	4.9		
Tin	50	13	13		
Titanium	10	.15	.43		
Uranium	50	3.7	3.9		
Vanadium	10	.4	.39		
Zinc	30	.6	1.9		

Associated samples MP12869: D57481-1F, D57481-2F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D57481
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

QC Batch ID: MP12869
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 05/08/14

Metal	RL	IDL	MDL	MB raw	final

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D57481
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

QC Batch ID: MP12869
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 05/08/14

Metal	D57479-1F Original	MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium	10.3	2060	2000	102.5	70-130
Beryllium					
Boron	301	1420	1000	111.9	70-130
Cadmium					
Calcium	151000	175000	25000	96.0	70-130
Chromium					
Cobalt					
Copper					
Iron	38.3	5070	5000	100.6	70-130
Lead					
Lithium					
Magnesium	92700	117000	25000	97.2	70-130
Manganese	87.0	576	500	97.8	70-130
Molybdenum					
Nickel					
Phosphorus					
Potassium	5010	32500	25000	110.0	70-130
Selenium					
Silicon					
Silver					
Sodium	309000	334000	25000	100.0	70-130
Strontium	2670	3160	500	98.0	70-130
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP12869: D57481-1F, D57481-2F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D57481
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

QC Batch ID: MP12869 Methods: EPA 200.7
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 05/08/14

	D57479-1F	Spikelot		QC
Metal	Original MS	ICPALL2	% Rec	Limits

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D57481
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

QC Batch ID: MP12869
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 05/08/14

Metal	D57479-1F Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium	10.3	2030	2000	101.0	1.5	20
Beryllium						
Boron	301	1400	1000	109.9	1.4	20
Cadmium						
Calcium	151000	173000	25000	88.0	1.1	20
Chromium						
Cobalt						
Copper						
Iron	38.3	4990	5000	99.0	1.6	20
Lead						
Lithium						
Magnesium	92700	115000	25000	89.2	1.7	20
Manganese	87.0	563	500	95.2	2.3	20
Molybdenum						
Nickel						
Phosphorus						
Potassium	5010	32300	25000	109.2	0.6	20
Selenium						
Silicon						
Silver						
Sodium	309000	329000	25000	80.0	1.5	20
Strontium	2670	3110	500	88.0	1.6	20
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP12869: D57481-1F, D57481-2F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D57481
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

QC Batch ID: MP12869 Methods: EPA 200.7
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 05/08/14

Metal	D57479-1F Original MSD	Spikelot ICPALL2 % Rec	MSD RPD	QC Limit

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D57481
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

QC Batch ID: MP12869
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 05/08/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	2050	2000	102.5	85-115
Beryllium				
Boron	1060	1000	106.0	85-115
Cadmium				
Calcium	25600	25000	102.4	85-115
Chromium				
Cobalt				
Copper				
Iron	5020	5000	100.4	85-115
Lead				
Lithium				
Magnesium	25700	25000	102.8	85-115
Manganese	497	500	99.4	85-115
Molybdenum				
Nickel				
Phosphorus				
Potassium	26300	25000	105.2	85-115
Selenium				
Silicon				
Silver				
Sodium	26200	25000	104.8	85-115
Strontium	508	500	101.6	85-115
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP12869: D57481-1F, D57481-2F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D57481
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

QC Batch ID: MP12869 Methods: EPA 200.7
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 05/08/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits

(anr) Analyte not requested

Mountain States ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D57481
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Bicarbonate as CaC	GN24755	5.0	2.2	mg/l	100	99.1	99.1	90-110%
Alkalinity, Carbonate	GN24756	5.0	2.2	mg/l	100	99.1	99.1	80-120%
Alkalinity, Total as CaCO3	GN24752	5.0	2.2	mg/l	100	99.1	99.1	90-110%
Bromide	GP12524/GN24611	0.050	0.0	mg/l	0.5	0.509	101.8	90-110%
Chloride	GP12524/GN24611	0.50	0.0	mg/l	5	4.65	93.0	90-110%
Fluoride	GP12524/GN24611	0.10	0.0	mg/l	1	0.976	97.6	90-110%
Iron Reducing Bacteria	MB362	25	<25	CFU/ml				
Nitrogen, Nitrate	GP12524/GN24611	0.010	0.0	mg/l	0.1	0.0923	92.3	90-110%
Nitrogen, Nitrite	GP12524/GN24611	0.0040	0.0	mg/l	0.05	0.0506	101.2	90-110%
Phosphorus, Total	GP12550/GN24662	0.010	0.0	mg/l	0.38	0.40	105.4	80-120%
Slime Forming Bacteria	MB363	500	<500	CFU/ml				
Solids, Total Dissolved	GN24644	10	0.0	mg/l	400	399	99.8	90-110%
Specific Conductivity	GP12559/GN24682			umhos/cm	101	101	101.0	90-110%
Sulfate	GP12524/GN24611	0.50	0.0	mg/l	5	4.94	98.8	90-110%
Sulfate Reducing Bacteria	MB364	200	<200	CFU/ml				
pH	GN24623			su	8.00	7.99	99.9	99.3-100.7%

Associated Samples:
Batch MB362: D57481-1, D57481-2
Batch MB363: D57481-1, D57481-2
Batch MB364: D57481-1, D57481-2
Batch GN24623: D57481-1, D57481-2
Batch GN24644: D57481-1, D57481-2
Batch GN24752: D57481-1, D57481-2
Batch GN24755: D57481-1, D57481-2
Batch GN24756: D57481-1, D57481-2
Batch GP12524: D57481-1, D57481-2
Batch GP12550: D57481-1, D57481-2
Batch GP12559: D57481-1, D57481-2
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D57481
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO3	GN24752	D57802-2	mg/l	120	118	1.9	0-20%
Phosphorus, Total	GP12550/GN24662	D57444-1	mg/l	0.014	0.014	0.0	0-20%
Solids, Total Dissolved	GN24644	D57440-2	mg/l	2160	2130	1.4	0-20%
Specific Conductivity	GP12559/GN24682	D57452-1	umhos/cm	1150	1140	0.7	0-20%

Associated Samples:
Batch GN24644: D57481-1, D57481-2
Batch GN24752: D57481-1, D57481-2
Batch GP12550: D57481-1, D57481-2
Batch GP12559: D57481-1, D57481-2
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D57481
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO3	GN24752	D57802-2	mg/l	120	100	215	94.8	80-120%
Bromide	GP12524/GN24611	D57481-2	mg/l	0.17	1	1.2	103.0	80-120%
Bromide	GP12524/GN24611	D57481-2	mg/l	0.17	1	1.2	103.0	80-120%
Chloride	GP12524/GN24611	D57481-2	mg/l	21.0	25	45.7	102.8	80-120%
Chloride	GP12524/GN24611	D57481-2	mg/l	20.0	25	45.7	102.8	80-120%
Fluoride	GP12524/GN24611	D57481-2	mg/l	0.27	2	2.3	101.5	80-120%
Fluoride	GP12524/GN24611	D57481-2	mg/l	0.25 U	2	2.3	101.5	80-120%
Nitrogen, Nitrate	GP12524/GN24611	D57481-2	mg/l	1.1	0.5	1.5	104.0	80-120%
Nitrogen, Nitrate	GP12524/GN24611	D57481-2	mg/l	0.98	0.5	1.5	104.0	80-120%
Nitrogen, Nitrite	GP12524/GN24611	D57481-2	mg/l	0.015 U	0.1	0.10	100.0	80-120%
Nitrogen, Nitrite	GP12524/GN24611	D57481-2	mg/l	0.0060 U	0.1	0.10	100.0	80-120%
Phosphorus, Total	GP12550/GN24662	D57444-1	mg/l	0.014	0.40	0.37	89.0	80-120%
Sulfate	GP12524/GN24611	D57481-2	mg/l	94.3	25	120	102.8	80-120%
Sulfate	GP12524/GN24611	D57481-2	mg/l	86.9	25	120	102.8	80-120%

Associated Samples:
Batch GN24752: D57481-1, D57481-2
Batch GP12524: D57481-1, D57481-2
Batch GP12550: D57481-1, D57481-2
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D57481
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 342-33 BWQ

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Alkalinity, Total as CaCO3	GN24752	D57802-2	mg/l	120	100	217	-0.6	20%
Bromide	GP12524/GN24611	D57481-2	mg/l	0.17	1	1.3	-0.1	20%
Bromide	GP12524/GN24611	D57481-2	mg/l	0.17	1	1.3	-0.1	20%
Chloride	GP12524/GN24611	D57481-2	mg/l	21.0	25	45.8	-0.0	20%
Chloride	GP12524/GN24611	D57481-2	mg/l	20.0	25	45.8	-0.0	20%
Fluoride	GP12524/GN24611	D57481-2	mg/l	0.27	2	2.4	-0.0	20%
Fluoride	GP12524/GN24611	D57481-2	mg/l	0.25 U	2	2.4	-0.0	20%
Nitrogen, Nitrate	GP12524/GN24611	D57481-2	mg/l	1.1	0.5	1.5	0.0	20%
Nitrogen, Nitrate	GP12524/GN24611	D57481-2	mg/l	0.98	0.5	1.5	0.0	20%
Nitrogen, Nitrite	GP12524/GN24611	D57481-2	mg/l	0.015 U	0.1	0.11	-0.1	20%
Nitrogen, Nitrite	GP12524/GN24611	D57481-2	mg/l	0.0060 U	0.1	0.11	-0.1	20%
Phosphorus, Total	GP12550/GN24662	D57444-1	mg/l	0.014	0.40	0.370	0.0	20%
Sulfate	GP12524/GN24611	D57481-2	mg/l	94.3	25	120	0.0	20%
Sulfate	GP12524/GN24611	D57481-2	mg/l	86.9	25	120	0.0	20%

Associated Samples:
Batch GN24752: D57481-1, D57481-2
Batch GP12524: D57481-1, D57481-2
Batch GP12550: D57481-1, D57481-2
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits