



March 26, 2013

Mr. Brandon Danforth
Environmental Specialist
WPX Energy Rocky Mountain LLC
1058 County Road 215
Parachute, Colorado 81635

**RE: Sampling Analysis Summary: Drill Pad PA 334-32 COGCC Rule 317B
November/December 2013 Post DCPS Operations Water Quality Sampling**

Dear Mr. Danforth,

Western Water & Land, Inc. (WWL) conducted field activities in support of surface water sampling for the WPX Energy Rocky Mountain, LLC (WPX) PA 334-32 Drilling, Completion, Production, and Storage (DCPS) Operations locations in accordance with COGCC Rule 317B. DCPS Operations location PA 334-32 is located in SW1/4, SE1/4, Section 32, Township 6 S, Range 95 W 6th P.M. This location falls within the Rule 317B 0.5-mile buffer zone for the Parachute/Battlement Mesa Surface Water Supply Area (SWSA). This letter report summarizes field activities, and the quality control and water chemistry results associated with the November/December 2013 sampling event for DCPS Operations at Drill Pad PA 334-32.

Previously established sampling locations for the SWSA were provided to WWL by WPX. The sampling locations were established by HRL Compliance Solutions, Inc. (HCSI). Sampling locations downgradient of the referenced WPX DCPS Operations locations are shown in Figure 1. WWL established a new sampling location, B27, as the nearest downgradient sampling location to the referenced WPX DCPS Operations location.

Field Activities

Sampling location B27 was visited by WWL personnel on January 30, 2014 and sample "PA 334-32 B27" was collected. B27 is located on the south side of the Colorado River below the Battlement Mesa golf course. See Figure 1 for the sampled location. Photographs of the sampling sites are shown in Attachment A. Field monitoring forms are shown in Attachment B.

All sampling procedures followed the WPX Sampling and Analysis Plan (SAP). The sample was collected by directly filling the sample containers from the river.

Samples were relinquished to the Accutest Mountain States Laboratory (AMS), Wheat Ridge, Colorado service center technician in Rifle, Colorado. AMS service center personnel carefully pack samples in plastic ice chests (coolers) with ice for preservation and ship them to the analytical laboratory by way of overnight courier (FedEx Ground).

QUALITY CONTROL

Quality control measures consisted of a review of field sampling procedures and the analytical laboratory quality control data. Laboratory quality control information was reviewed and checked for consistency in meeting acceptance criteria and the assignment of data qualifiers. In addition, WWL conducted quality control evaluations of cation-anion balance (CAB) and total dissolved solids calculated versus measured ratio; additional qualifiers were assigned to analytical results as necessary.

Field Procedures

WWL conducted field sampling procedures in accordance with the WPX SAP. All samples were collected by direct filling methods. No field procedure deviations occurred that were cause for data qualification.

COC

The chain-of-custody form was reviewed for correct and complete sample IDs, requested analysis, and other information. The analytes requested on the COC matched the requirements of Rule 317B. DRO (diesel range organics) and GRO (gasoline range organics) were designated on the COC in place of TPH, a required analysis for Rule 317B. The Trip Blank was present but not listed on the COC. No other errors or pertinent information was observed, and no corrections were needed.

Sample Receipt

Sample PA 334-32 B27 was received by AMS in one cooler within the temperature range criteria ($4^{\circ}\text{C} \pm 2^{\circ}\text{C}$). Custody seals were intact. No quality control issues were reported on the sample receipt form. No qualifiers were assigned to results based on sample receipt conditions.

Holding Times

All analyses were conducted within recommended holding times, with the exception of lab pH; WWL designated an "H" qualifier to indicate the results are estimated.

Analytical Methods

The analytical methods used by AMS were checked for consistency with the analytical schedule in the SAP or other pertinent documents. Analytical methods were found to be consistent with the following modifications: Gasoline Range Organics (TPH volatiles) were analyzed using Method SW846 8260B. Diesel Range Organics (TPH extractables) were analyzed according to SW846 8015B.

Detection Limits

Detection limits provided with the analytical results were compared to the original quoted detection limits from the analytical laboratory. Detection limits were as quoted with no deviations observed except as applied to increased dilution factors.

Chloride and sulfate had dilution factors of 10. Fluoride, nitrate as N, and nitrite as N had dilution factors of 2. All other analytes had a dilution factor of 1. Nitrite as N had an elevated detection limit due to matrix interference. AMS reports sample results at the reporting limit (RL) as "undetected" or "U" rather than reporting results as less than the reporting limit, e.g. $< 0.05\mu\text{g/L}$.

Completeness

Data completeness is a measure of requested analysis and received results. The analytical constituents required under Rule 317B were compared to those analyzed in the laboratory reports. Qualified data are included as analyzed data. No data were rejected for field or analytical reasons. WWL separately designated DRO (Diesel Range Organics) and GRO (Gasoline Range Organics) for the TPH analysis

required under Rule 317B. All requested analytical data matched the laboratory reported data results; data completeness is considered 100 %.

Cation-Anion Balance

The cation-anion balance (CAB) calculates and compares the total charge of positively charged ions and the total charge of the negatively charged ions. It is a measure of the quality of the analysis; if the charge is not balanced, an error may exist in the analysis. CAB calculations were performed for the sample; if the CAB exceeded ± 5 %, i.e. < 95 % or > 105 %, the analytical results data may be qualified as estimated.

In general, WWL will assign a qualifier (estimated result) for a CAB equal to or greater than plus or minus 10 %, and may assign a qualifier for CAB percentages between plus or minus 5 % and less than 10 %. The final CAB calculation for the sample is as follows:

- PA 334-32 B27: 3.076 %

The analytical results for cations and anions for the samples were not qualified on the basis of the CAB. See Attachment C, Data Quality Review Sheets.

TDS

The ratio of laboratory-measured total dissolved solids (TDS) versus calculated TDS were computed and sample ratios less than 0.80 and greater than 1.20 are cause for a review of major ion reporting errors.

In general, WWL will assign a qualifier (an estimated result) when TDS ratios are less than or equal to 0.5 and equal to 1.5 or greater, and may assign a qualifier for TDS ratios greater than 0.5 and less than 0.8 and greater than 1.2 and less than 1.5. The TDS calculation for sample PA 334-32 B27 is as follows:

- PA 334-32 B27: 1.01

No sample results were rejected or qualified on the basis of the TDS acceptance criteria.

Field Duplicates

Field duplicates evaluate the precision of analytical results for field samples collected for a specific sampling event. Precision is measured by the calculation of the relative percent difference (RPD) using the analytical results from the original investigative sample and the duplicate sample. An RPD limit of 35% is used for the data qualification criterion. When the original sample has a detected concentration above the reporting limit (RL) and the concentration of the field duplicate is less than the RL, the calculation of a field duplicate RPD is not applied. For sample results less than 5 times the RL, the acceptance criteria is \pm RL.

No field duplicates were collected for this sampling event, therefore no field duplicate RPDs were calculated.

Trip Blanks

Trip blanks are analyte-free matrix (water in this case) samples supplied by the analytical laboratory that are shipped inside the sample shipping containers to and from the field investigation site. Field blanks test for potential contamination during shipping and sampling field procedures. For this project, field blanks are analyzed for volatiles only. There were no detections of volatiles (benzene, toluene, ethylbenzene, and xylenes; BTEX) in the analyzed trip blank sample with the exception of

ethylbenzene; however, the result was under the reporting limit and qualified with a “J” and is considered estimated.

Laboratory Quality Control

The analytical laboratory conducts an extensive quality control program and as part of the overall quality control process. The analytical laboratory quality control program includes the use of various laboratory quality control samples including but not limited to: method blanks (MB), laboratory control samples (LCS) and duplicates (LCSD), matrix spikes (MS) and duplicates (MSD), surrogates, initial calibration verification standards (ICVs), continuing calibration verification standard (CCVs), and others.

WWL verified that the lab performed and reported quality control data correctly. This included checking laboratory control samples data for meeting laboratory QC limits, acceptance criteria, and recovery limits. QC limits associated with the relative percent difference (RPD) between duplicate samples typically range from a limit of 20 % for metals and general or wet chemistry to 30 % for organic analytes. Typical percent recovery acceptance limits are 80 to 120 % for metals and wet chemistry and 70 to 130 % for organics; some organic compounds may have much broader recovery limits.

All sampling event data packages showed that no laboratory control samples exceeded the QC limits or acceptance criteria without data qualification, and no recovery limits were exceeded with the exception of selenium, which exceeded the control limit by 2 %; however, sample results were less than the reporting limit and no qualifiers were assigned.

Accuracy

Accuracy was evaluated as a percent recovery of an analyte in a reference standard or a spiked sample, e.g. matrix spike and matrix spike duplicate. In cases where percent recoveries exceeded the laboratory acceptance criteria, data would be qualified depending on whether the analyte was detected above the method detection limit or not, if the recovery of the associated control sample was acceptable, or if the analyte concentration in the sample was disproportionate to the spike level and that the recovery of the associated control sample was acceptable. Note that the analytical laboratory may not have selected a sample from this field investigation for testing matrix quality control samples. In these cases, true matrix affects cannot be assessed and the resulting data should be considered as estimated. This will be noted in the DQR sheets (Attachment C), but the data is not qualified by WWL.

AMS did not select PA 334-32 B27 matrix for testing matrix quality control samples. AMS selected a number of other samples for testing matrix spikes (MS) and matrix spike duplicates (MSD) based on the analytical method being used. The MS and MSD recoveries met guidance criteria for precision and accuracy for all analytes.

No qualifiers were assigned to the results by the lab. WWL did not assign additional qualifiers to the analytical results.

Precision

Precision is the measurement of how closely replicate sample constituents agree and is not related to the true value (concentration). Precision is measured using RPD calculations for laboratory duplicate samples such as LCSD and MSD samples and any other duplicate samples generated by the laboratory. The RPDs were compared to the laboratory acceptance limit of 20 for metals and general or wet chemistry and 30 % for organic analytes. AMS did not select a sample from this field investigation for RPD calculations. The reported RPD results were therefore associated with another sample's matrix in the analyzed batch or run. The RPD values for ethylbenzene, toluene, and total xylene exceeded the

laboratory acceptance limit (74 %, 200 %, and 200 %, respectively). However, the results for ethylbenzene in the sample and duplicate were under the reporting limit and qualified with a “J”, the result for toluene in the sample was below the reporting limit and qualified with a “J” and the result for the duplicate were non-detect, and the result for xylene was compared to a duplicate result of non-detect. The lab reported that the probable cause for the high RPDs was sample nonhomogeneity. No qualifiers were assigned to sample PA 334-32 B27 by the laboratory because of RPD values exceeding the laboratory acceptance criteria.

Data Quality Review Sheets are presented in Attachment C.

Summary

AMS assigned analytical results that were undetected with a “U” qualifier, and a “J” for results above the method detection limit but lower than the reporting limit. WWL assigned an “H” qualifier for analyses performed outside of analytic holding times to indicate the results are estimated. WWL did not assign other qualifiers to the data. See Attachment C for individual parameters that were qualified.

ANALYTICAL RESULTS

Laboratory analysis was performed by Accutest Mountain States (AMS), in Wheatridge, Colorado, in accordance with the analytical schedule described in Rule 317B. The analytical results are summarized in Attachment D; the data are qualified as indicated. The full laboratory analytical report is presented in Attachment E.

The analytical results showed detections of ethylbenzene (0.55 µg/L) and xylene (total) (2.7 µg/L) at estimated concentrations between the method detection limit (0.25 µg/L for ethylbenzene and 2.0 µg/L for xylenes) and reporting limit (2.0 µg/L for ethylbenzene and 3.0 µg/L for xylenes). Ethylbenzene was also detected in the trip blank indicating potential sample contamination associated with sampling, shipping, or laboratory procedures. In addition, TPH-DRO was detected at 0.201 mg/L just above the reporting limit of 0.19 mg/L. DRO detections can also be associated with natural media. No polycyclic aromatic hydrocarbon compounds (PAHs) were detected. Metals, common ions and other wet chemistry parameters were not anomalous and reflect concentrations similar to historic trends measured by the U.S. Geological Survey at various monitoring stations on the Colorado River.

If you have any questions or concerns, please contact me at (970) 242-0170.

Sincerely,



Bruce D. Smith
Principal Hydrogeologist
WESTERN WATER & LAND, INC.

Attachments

Figure 1- Sampling Location Map
Attachment A - Photographs
Attachment B - Field Monitoring Forms

Mr. Brandon Danforth

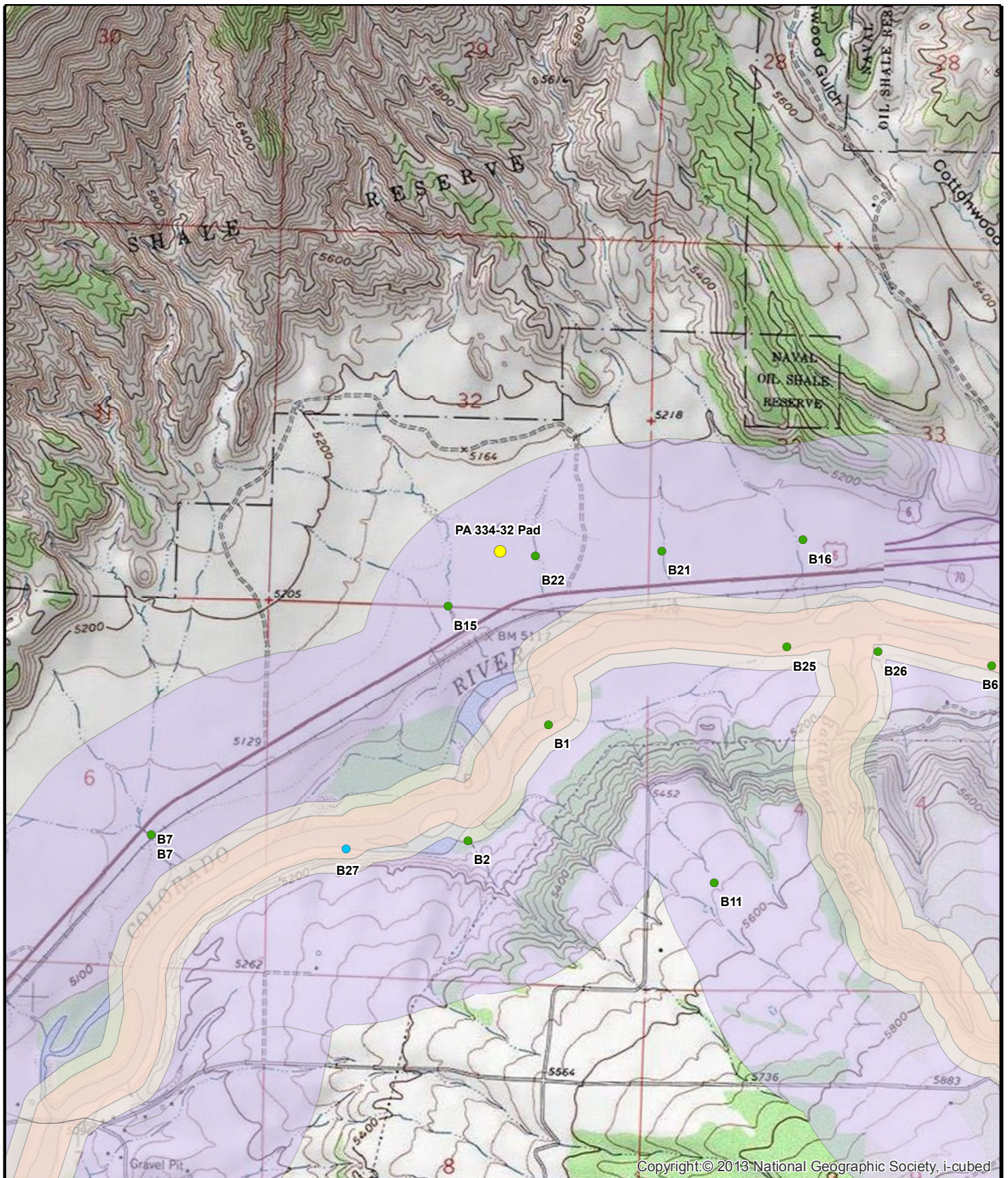
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Attachment C - Data Quality Review Sheets

Attachment D - Summary of Analytical Results

Attachment E - Laboratory Analytical Summary Report



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Legend

- 300ft Buffer
- 500ft Buffer
- Halfmile Buffer
- Established Sampling Sites
- Sampled Location



1:22,000

0 500 1,000 2,000 Feet

**Figure 1: DCPS Operation Location PA 334-32
Rule 317 b. Nov/Dec 2013 Sampling Location
SW1/4, SE1/4, S32, T6S, R95W, 6 PM**

Garfield County, Colorado

WPX Energy Rocky Mountain LLC

Basemap Source: Esri ArcGIS Online



Western Water & Land, Inc.
Applications in Earth Science

ATTACHMENT A

Photographs



Photo 1. B27 Sampling Location (PA 334-32 B27) on Colorado River



Photo 2. B27 Sampling Location (PA 334-32 B27) on Colorado River; View Up-River



Photo 3. B27 Sampling Location (PA 334-32 B27) on Colorado River; View Down-River

WPX COGCC Rule 317B Surface Water Monitoring Field Form

Project Information			
Surface Water Supply Area:	Battlement Mesa / Parachute	Site API(s):	05-045-08056
Site Name (Well Pad(s)):	PA 334-32	Sample Date:	1-30-2014
Station Name:	B27	Start Time:	1650
COGCC Facility ID:	753112	End Time:	1730
Field Sample ID:	PA 334-32 B27	Sample Time:	1700
Landowner Name:	Battlement Mesa Land Investments	Sample Team:	SLK, NWS
Landowner Address:	736 Sippelle Dr, Parachute, CO	Observer:	SLK
Time of DCPS Operations:	Nov/Dec 2013	Lead Signature/Date:	<i>[Signature]</i> 2-3-14

Station Information			
Station Description: River bank comprised of cobble + small boulders			
Approximate Distance to Well Pad: 4725 ft			
Station Type: Stream / Spring / Seep / Pond / Lake / NPDES Outfall / Other:			
Sampling Location: Bank / Pipe / Wading / Boat / Bridge / Hose bib / Tank / Other:			
Sampling Location Description: Pool / Riffle / Eddy / Backwater / Open Channel / Braided / Other: Downstream of riffle			
Sampling Location Width: ~20 ft		Sampling Location Depth: NM	
GPS Location:	Zone	x-08.02692	y 39.46435 z 5111 ft

Weather Conditions			
Sky:	Clear / Scattered / Cloudy / Overcast	Estimated Air Temp (deg F):	30
Precipitation:	None / Light / Moderate / Heavy	Precip Type:	None / Rain / Sleet / Hail / Snow
Wind:	Calm / Light / Mod / Strong	Wind Speed/Direction:	N/A

Field Measurements							
Parameter	Units	Reading	Time	Flag Code	Instrument	In-situ or Container	Comments
Water Temp	deg C	-0.09	1710		YSI 556	In-Situ	
pH	s.u.	7.88					
Sp. Conductivity	uS/cm	1172					
Conductivity	uS/cm	611					
DO Saturation	%	99.6					
DO	mg/L	14.56					
Baro Press	mmHg	620.8					
ORP	RmV	109.7					
Turbidity	NTU	7.59	1750	AV	Micro TPI		6.91, 8.22, 7.65
Discharge		NM					
H2S	mg/L	NM					

Color:	Clear / White / Yellow / Brown / Green / Blue / Other	Light / Med / Dark
Odor:	None / Mild / Mod / Strong	
Effervescence:	None / Mild / Mod / Strong	Bubbles: None / Low / Mod / High
Sediment:	None / Light / Mod / Heavy	VOA Headspace: None / ≤ Pea Size / ≥ Pea Size

Lab Analysis:	Rule 317B / Rule 609 / COA 9 / COA 22 / Other
Field Filtered:	Yes / No
Filter Size:	N/A
No. Filters used:	N/A

Flag Codes: NM (not measured), E (estimated), N/A (not applicable), I (insufficient sample), Q (uncertain value), Y (calculated value), AV (averaged value), EC (exceeds calibration range), OT (other flag to be defined later), NS (not stabilized), VAR (variable)

WPX COGCC Rule 317B Surface Water Monitoring Field Form

Landowner Comments on water quality:

None

Additional information:

Sample site located in Flat water stretch after a riffle section. Bank scatter^{er} water near bank formed many small eddys, sampled a few feet out from eddys.

Calibration Info on RU 11-7 MWS

Calibration Information			Date:		Location:			
Instrument	Parameter	Units	Time	Calibration Standard Value	Calibration Standard Temp (°C)	Instrument Reading of Standard	Adjusted Reading	Comments
	pH	s.u.						
	pH	s.u.						
	pH	s.u.						
	SpC	uS/cm						
	SpC	uS/cm						
	DO	%						
	DO	%						
	ORP	RmV						
	Turbidity	NTU						

DATA QUALITY REVIEW SHEET

Facility ID: 753112
 Station Name: B27
 Sample Date: 1/30/14 5:00 PM
 Field Sample ID: PA 334-32 B27

Project: 317B: PA 334-32
 Lab Work Order: D54726
 QA/QC Review Date: 3/21/14
 Reviewer: J. Pahler

Field Sampling Data Review	Yes	No	N/A
1. Well properly purged?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Flow rate reduced prior to sampling?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Water quality parameters stable prior to sampling?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Field instruments calibrated properly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Sampling methods performed according to SAP procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Procedures consistent with obtaining a representative sample?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lab Data Report Review			
7. Proper sample custody maintained until laboratory receipt?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Any discrepancies noted on the lab receipt form? <i>If yes, list in the comments section.</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. All samples analyzed for the requested analyses?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Proper laboratory methods used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. All sample holding times met?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12. Lab QA samples (e.g., matrix spikes and matrix spike duplicates) collected and analyzed according to lab method and results within method acceptance limits?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
13. Was the field investigation sample matrix used by the lab for matrix QC for all analyses?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
14. Lab qualifiers for data (other than non-detect)? <i>List in comments.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are corrective actions required? <i>If yes, please list actions and dates to be completed by:</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<i>Corrective Action</i>	<i>Date to be completed</i>		

Calculated Parameters	Calculated Value	Lab Value	Ratio/Percent Difference	Acceptable Limit	Meets QC Criteria?
Cation/Anion Balance, % (CAB)	3.076	N/A	N/A	±5 %	<input checked="" type="checkbox"/>
Total Dissolved Solids, mg/L (TDS)	666.19	658	1.01	0.8 – 1.2	<input checked="" type="checkbox"/>
Specific Conductance, µS/cm (SpC)	982	1090	0.90	0.8 – 1.2	<input checked="" type="checkbox"/>

Comments:

pH analyzed out of analysis holding time, WWL qualified with "H"; result considered estimated. Lab QC duplicate high outside control limits for BTEX due to possible sample nonhomogeneity; for ethylbenzene (74 %), toluene (200 %), and xylene (200 %). Note that this field sample was not used for lab QC. Blank spike recovery of selenium high (2 %) outside of control limits. Lab qualifier "J" assigned to ethylbenzene and toluene in field sample results, and ethylbenzene in Trip Blank; results below reporting limit and considered estimated.

WPX 317B Sampling - DCPS Operations Nov/Dec 2013, Parachute/Battlement Mesa SWSA														
Station Name			PA 334-32 B27						Trip Blank					
Facility ID			753112						753112					
Sample Date			1/30/2014 17:00						1/30/2014 0:00					
Field Sample ID			PA 334-32 B27						TRIP BLANK					
Lab Sample ID			D54726-1						D54726-2					
	ReportingUnits	AnalyticMethod	Result	Lab Qual	WWL Qual	RL	MDL	DF	Result	Lab Qual	WWL Qual	RL	MDL	DF
Inorganics														
Alkalinity AS CaCO3, Total	mg/l	SM 2320B-2011	127			5		1						
Alkalinity, Bicarbonate as CaCO3	mg/l	SM 2320B-2011	127			5		1						
Alkalinity, Carbonate as CaCO3	mg/l	SM 2320B-2011	5	U		5		1						
Chloride	mg/l	EPA 300.0/SW846 9056	209			5		10						
Fluoride	mg/l	EPA 300.0/SW846 9056	0.24			0.2		2						
Nitrate as N	mg/l	EPA 300.0/SW846 9056	0.19			0.02		2						
Nitrite as N	mg/l	EPA 300.0/SW846 9056	0.008	U		0.008		2						
pH	s.u.	SM4500HB+-2011/9040C	8.11		H			1						
Specific Conductivity	umhos/cm	SM 2510B-2011	1090			1		1						
Sulfate	mg/l	EPA 300.0/SW846 9056	116			5		10						
Total Dissolved Solids	mg/l	SM 2540C-2011	658			10		1						
Dissolved Metals														
Arsenic	ug/l	EPA 200.7	25	U		25		1						
Barium	ug/l	EPA 200.7	50			10		1						
Calcium	ug/l	EPA 200.7	68100			400		1						
Chromium	ug/l	EPA 200.7	10	U		10		1						
Iron	ug/l	EPA 200.7	18.5			10		1						
Magnesium	ug/l	EPA 200.7	14000			200		1						
Potassium	ug/l	EPA 200.7	3590			1000		1						
Selenium	ug/l	EPA 200.7	50	U		50		1						
Sodium	ug/l	EPA 200.7	128000			400		1						
Organics														
Diesel Range Organics	mg/l	SW846-8015B	0.201			0.19	0.17	1						
Gasoline Range Organics	ug/l	SW846 8260B	200	U		200		1	200	U		200		1
VOCs														
Benzene	ug/l	SW846 8260B	1	U		1	0.25	1	1	U		1	0.25	1
Ethylbenzene	ug/l	SW846 8260B	0.55	J		2	0.25	1	0.3	J		2	0.25	1
Toluene	ug/l	SW846 8260B	2	U		2	1	1	2	U		2	1	1
Xylenes (Total)	ug/l	SW846 8260B	2.7	J		3	2	1	3	U		3	2	1
SVOCs														
1-Methylnaphthalene	ug/l	SW846 8270C BY SIM	0.19	U		0.19	0.071	1						
2-Methylnaphthalene	ug/l	SW846 8270C BY SIM	0.19	U		0.19	0.071	1						
Acenaphthene	ug/l	SW846 8270C BY SIM	0.19	U		0.19	0.047	1						
Acenaphthylene	ug/l	SW846 8270C BY SIM	0.19	U		0.19	0.047	1						
Anthracene	ug/l	SW846 8270C BY SIM	0.19	U		0.19	0.047	1						
Benzo(a)anthracene	ug/l	SW846 8270C BY SIM	0.095	U		0.095	0.047	1						
Benzo(a)pyrene	ug/l	SW846 8270C BY SIM	0.19	U		0.19	0.047	1						
Benzo(b)fluoranthene	ug/l	SW846 8270C BY SIM	0.095	U		0.095	0.047	1						
Benzo(g,h,i)perylene	ug/l	SW846 8270C BY SIM	0.19	U		0.19	0.047	1						
Benzo(k)fluoranthene	ug/l	SW846 8270C BY SIM	0.095	U		0.095	0.047	1						
Chrysene	ug/l	SW846 8270C BY SIM	0.095	U		0.095	0.047	1						
Dibenz(a,h)anthracene	ug/l	SW846 8270C BY SIM	0.095	U		0.095	0.047	1						
Fluoranthene	ug/l	SW846 8270C BY SIM	0.19	U		0.19	0.047	1						
Fluorene	ug/l	SW846 8270C BY SIM	0.19	U		0.19	0.047	1						
Indeno(1,2,3-cd)pyrene	ug/l	SW846 8270C BY SIM	0.19	U		0.19	0.066	1						
Naphthalene (SVOA)	ug/l	SW846 8270C BY SIM	0.19	U		0.19	0.095	1						
Phenanthrene	ug/l	SW846 8270C BY SIM	0.19	U		0.19	0.047	1						
Pyrene	ug/l	SW846 8270C BY SIM	0.19	U		0.19	0.047	1						

WPX 317B Sampling - DCPS Operations Nov/Dec 2013, Parachute/Battlement Mesa SWSA

Station Name			PA 334-32 B27						Trip Blank					
Facility ID			753112						753112					
Sample Date			1/30/2014 17:00						1/30/2014 0:00					
Field Sample ID			PA 334-32 B27						TRIP BLANK					
Lab Sample ID			D54726-1						D54726-2					
	ReportingUnits	AnalyticMethod	Result	Lab Qual	WWL Qual	RL	MDL	DF	Result	Lab Qual	WWL Qual	RL	MDL	DF
Field_Parameters														
Bubbles	nu	Field	None					1						
Color	nu	Field	Clear					1						
Conductivity, Field	uS/cm	Field	611					1						
Dissolved Oxygen, Field	mg/l	Field	14.56					1						
Dissolved Oxygen, Field, %	%	Field	99.6					1						
Effervescence	nu	Field	None					1						
Odor	nu	Field	None					1						
ORP, field	mv	Field	109.7					1						
pH, Field	s.u.	Field	7.88					1						
Sediment	nu	Field	None					1						
Specific Conductivity, Field	uS/cm	Field	1172					1						
Temperature, Water	Deg C	Field	-0.09					1						
Turbidity, field	NTUs	Field	7.59		AV			1						
VOA Headspace	nu	Field	None					1						

Notes:

U = not detected at the reporting limit

J = result between RL and MDL, estimated

H = hold time exceeded

AV = result averaged



02/07/14

Technical Report for

WPX Energy Rocky Mountain, LLC

WWLCOGJ: PA 334-32 BWQ R06 317B

Accutest Job Number: D54726

Sampling Date: 01/30/14

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: 44



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.

A handwritten signature in black ink, appearing to read 'Scott Heideman'.

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)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.

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Sample Summary

WPX Energy Rocky Mountain, LLC

Job No: D54726

WWLCOGJ: PA 334-32 BWQ R06 317B

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
D54726-1	01/30/14	17:00	NWS	01/31/14	AQ	Water	PA 334-32 B27
D54726-1F	01/30/14	17:00	NWS	01/31/14	AQ	Water Filtered	PA 334-32 B27
D54726-2	01/30/14	00:00	NWS	01/31/14	AQ	Trip Blank Water	TRIP BLANK



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: WPX Energy Rocky Mountain, LLC

Job No D54726

Site: WWLCOGJ: PA 334-32 BWQ R06 317B

Report Date 2/7/2014 12:27:03 PM

On 01/31/2014, 1 sample(s), 1 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 0.9 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D54726 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: V7V1378
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D54704-1DUP, D54742-1MS, D54704-1DUP were used as the QC samples indicated.
- The duplicate RPD(s) for Ethylbenzene, Toluene, Xylene (total) are outside control limits for sample D54704-1DUP. High RPD due to possible sample nonhomogeneity.
- D54742-1MS: The pH of the sample aliquot for VOA analysis was >2 at time of analysis.

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix AQ	Batch ID: OP9338
------------------	-------------------------

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D54736-2MS, D54736-2MSD were used as the QC samples indicated.

Extractables by GC By Method SW846-8015B

Matrix AQ	Batch ID: OP9337
------------------	-------------------------

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D54519-26MS, D54519-26MSD were used as the QC samples indicated.

Metals By Method EPA 200.7

Matrix AQ	Batch ID: MP12245
------------------	--------------------------

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D54725-1MS, D54725-1MSD were used as the QC samples for the metals analysis.
- The blank spike (BS) recovery(s) of Selenium are outside control limits. All sample results < RL.

Wet Chemistry By Method EPA 300.0/SW846 9056

Matrix AQ

Batch ID: GP11882

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D54710-1MS, D54710-1MSD were used as the QC samples for the Chloride, Fluoride, Nitrogen, Nitrate, Nitrogen, Nitrite, Sulfate, Chloride analysis.
- D54726-1 for Nitrogen, Nitrite: Elevated detection limit due to matrix interference.

Wet Chemistry By Method SM 2320B-2011

Matrix AQ

Batch ID: GN23575

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D54712-11ADUP, D54712-11AMS, D54712-11AMSD were used as the QC samples for the Alkalinity, Total as CaCO₃ analysis.

Matrix AQ

Batch ID: GN23578

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

Matrix AQ

Batch ID: GN23579

- 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: GP11890

- Sample(s) D54704-1DUP were used as the QC samples for the Specific Conductivity analysis.

Wet Chemistry By Method SM 2540C-2011

Matrix AQ

Batch ID: GN23524

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D54661-8DUP were used as the QC samples for the Solids, Total Dissolved analysis.

Wet Chemistry By Method SM4500HB+-2011/9040C

Matrix AQ

Batch ID: GN23532

- The following samples were run outside of holding time for method SM4500HB+-2011/9040C: D54726-1 Analysis performed past the required 15 minutes from collection time/holding time.

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

Page 1 of 1

Job Number: D54726
Account: WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: PA 334-32 BWQ R06 317B
Collected: 01/30/14



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

D54726-1 PA 334-32 B27

Ethylbenzene	0.55 J	2.0	0.25	ug/l	SW846 8260B
Xylene (total)	2.7 J	3.0	2.0	ug/l	SW846 8260B
TPH-DRO (C10-C28)	0.201	0.19	0.17	mg/l	SW846-8015B
Alkalinity, Bicarbonate as CaCO ₃	127	5.0		mg/l	SM 2320B-2011
Alkalinity, Total as CaCO ₃	127	5.0		mg/l	SM 2320B-2011
Chloride	209	5.0		mg/l	EPA 300.0/SW846 9056
Fluoride	0.24	0.20		mg/l	EPA 300.0/SW846 9056
Nitrogen, Nitrate	0.19	0.020		mg/l	EPA 300.0/SW846 9056
Solids, Total Dissolved	658	10		mg/l	SM 2540C-2011
Specific Conductivity	1090	1.0		umhos/cm	SM 2510B-2011
Sulfate	116	5.0		mg/l	EPA 300.0/SW846 9056
pH ^a	8.11			su	SM4500HB+ -2011/9040C

D54726-1F PA 334-32 B27

Barium	50.0	10		ug/l	EPA 200.7
Calcium	68100	400		ug/l	EPA 200.7
Iron	18.5	10		ug/l	EPA 200.7
Magnesium	14000	200		ug/l	EPA 200.7
Potassium	3590	1000		ug/l	EPA 200.7
Sodium	128000	400		ug/l	EPA 200.7

D54726-2 TRIP BLANK

Ethylbenzene	0.30 J	2.0	0.25	ug/l	SW846 8260B
--------------	--------	-----	------	------	-------------

(a) Analysis performed past the required 15 minutes from collection time/holding time.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	PA 334-32 B27	Date Sampled:	01/30/14
Lab Sample ID:	D54726-1	Date Received:	01/31/14
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	WWLCOGJ: PA 334-32 BWQ R06 317B		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7V24867.D	1	02/03/14	JL	n/a	n/a	V7V1378
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	0.55	2.0	0.25	ug/l	J
1330-20-7	Xylene (total)	2.7	3.0	2.0	ug/l	J
	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	103%		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

Page 1 of 1

Client Sample ID:	PA 334-32 B27	Date Sampled:	01/30/14
Lab Sample ID:	D54726-1	Date Received:	01/31/14
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	WWLCOGJ: PA 334-32 BWQ R06 317B		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G17948.D	1	02/04/14	DC	02/04/14	OP9338	E3G892
Run #2							

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

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.19	0.047	ug/l	
208-96-8	Acenaphthylene	ND	0.19	0.047	ug/l	
120-12-7	Anthracene	ND	0.19	0.047	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.095	0.047	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.095	0.047	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.095	0.047	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.19	0.047	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.19	0.047	ug/l	
218-01-9	Chrysene	ND	0.095	0.047	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.095	0.047	ug/l	
206-44-0	Fluoranthene	ND	0.19	0.047	ug/l	
86-73-7	Fluorene	ND	0.19	0.047	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.19	0.066	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.19	0.071	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.19	0.071	ug/l	
91-20-3	Naphthalene	ND	0.19	0.095	ug/l	
85-01-8	Phenanthrene	ND	0.19	0.047	ug/l	
129-00-0	Pyrene	ND	0.19	0.047	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	95%		20-130%
321-60-8	2-Fluorobiphenyl	83%		20-130%
1718-51-0	Terphenyl-d14	68%		10-133%

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

Page 1 of 1

Client Sample ID:	PA 334-32 B27	Date Sampled:	01/30/14
Lab Sample ID:	D54726-1	Date Received:	01/31/14
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846-8015B SW846 1312		
Project:	WWLCOGJ: PA 334-32 BWQ R06 317B		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH017836.D	1	02/04/14	JS	02/03/14	OP9337	GFH879
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)	0.201	0.19	0.17	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	99%		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: PA 334-32 B27

Lab Sample ID: D54726-1

Matrix: AQ - Water

Date Sampled: 01/30/14

Date Received: 01/31/14

Percent Solids: n/a

Project: WWLCOGJ: PA 334-32 BWQ R06 317B

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate as CaC	127	5.0	mg/l	1	02/06/14	BF	SM 2320B-2011
Alkalinity, Carbonate	< 5.0	5.0	mg/l	1	02/06/14	BF	SM 2320B-2011
Alkalinity, Total as CaCO ₃	127	5.0	mg/l	1	02/06/14	BF	SM 2320B-2011
Chloride	209	5.0	mg/l	10	01/31/14 20:49	SK	EPA 300.0/SW846 9056
Fluoride	0.24	0.20	mg/l	2	01/31/14 15:11	SK	EPA 300.0/SW846 9056
Nitrogen, Nitrate	0.19	0.020	mg/l	2	01/31/14 15:11	SK	EPA 300.0/SW846 9056
Nitrogen, Nitrite ^a	< 0.0080	0.0080	mg/l	2	01/31/14 15:11	SK	EPA 300.0/SW846 9056
Solids, Total Dissolved	658	10	mg/l	1	02/03/14	RW	SM 2540C-2011
Specific Conductivity	1090	1.0	umhos/cm	1	02/03/14	KB	SM 2510B-2011
Sulfate	116	5.0	mg/l	10	01/31/14 20:49	SK	EPA 300.0/SW846 9056
pH ^b	8.11		su	1	02/03/14 15:50	JD	SM4500HB+ -2011/9040C

(a) Elevated detection limit due to matrix interference.

(b) Analysis performed past the required 15 minutes from collection time/holding time.

RL = Reporting Limit

Report of Analysis

Client Sample ID: PA 334-32 B27

Lab Sample ID: D54726-1F

Matrix: AQ - Water Filtered

Date Sampled: 01/30/14

Date Received: 01/31/14

Percent Solids: n/a

Project: WWLCOGJ: PA 334-32 BWQ R06 317B

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analized By	Method	Prep Method
Arsenic	< 25	25	ug/l	1	02/03/14	02/04/14 JB	EPA 200.7 ¹	EPA 200.7 ²
Barium	50.0	10	ug/l	1	02/03/14	02/04/14 JB	EPA 200.7 ¹	EPA 200.7 ²
Calcium	68100	400	ug/l	1	02/03/14	02/04/14 JB	EPA 200.7 ¹	EPA 200.7 ²
Chromium	< 10	10	ug/l	1	02/03/14	02/04/14 JB	EPA 200.7 ¹	EPA 200.7 ²
Iron	18.5	10	ug/l	1	02/03/14	02/04/14 JB	EPA 200.7 ¹	EPA 200.7 ²
Magnesium	14000	200	ug/l	1	02/03/14	02/04/14 JB	EPA 200.7 ¹	EPA 200.7 ²
Potassium	3590	1000	ug/l	1	02/03/14	02/04/14 JB	EPA 200.7 ¹	EPA 200.7 ²
Selenium	< 50	50	ug/l	1	02/03/14	02/04/14 JB	EPA 200.7 ¹	EPA 200.7 ²
Sodium	128000	400	ug/l	1	02/03/14	02/04/14 JB	EPA 200.7 ¹	EPA 200.7 ²

(1) Instrument QC Batch: MA4433

(2) Prep QC Batch: MP12245

RL = Reporting Limit

Report of Analysis

Client Sample ID:	TRIP BLANK	Date Sampled:	01/30/14
Lab Sample ID:	D54726-2	Date Received:	01/31/14
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	WWLCOGJ: PA 334-32 BWQ R06 317B		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7V24866.D	1	02/03/14	JL	n/a	n/a	V7V1378
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	0.30	2.0	0.25	ug/l	J
1330-20-7	Xylene (total)	ND	3.0	2.0	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	104%		62-130%
2037-26-5	Toluene-D8	98%		70-130%
460-00-4	4-Bromofluorobenzene	89%		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

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Mountain States
4036 Youngfield Street Wheat Ridge, Co 80033
TEL. 303-425-6021 877-737-4521
FAX 303-425-6021

PED-EX Tracking #		Bottle Order Control #	
Accutest Quote #		Accutest Job # DS4726	
Requested Analysis (see TEST CODE sheet)			Matrix Codes
B8015 PRO B8270 SIMPAH DSS MET - LF S04, ND30, ND2, F, CHL TDS, PH, SLON V82100 BTX GPD XCARBICALK			DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OL - Oil LIQ - Other Liquids AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank
			LAB USE ONLY
			01
			02TB
			S04 1/31/11
Comments / Special Instructions			
Diss. metals - lab filtered. bsmith@westernwaterandland.com See attached bottle order.			
including courier delivery.			
Intact	Date Time: 01-31-11/402	Received By: 2 Jacob Portman	1/31/11
Not Intact	Date Time:	Received By: 4	1/31/11
Preserved where applicable		On Ice	Cooler Temp. 0.9

5.1

D54726: Chain of Custody

Page 1 of 1

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

Page 1 of 1

Job Number: D54726
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: PA 334-32 BWQ R06 317B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7V1378-MB	7V24861.D	1	02/03/14	JL	n/a	n/a	V7V1378

The QC reported here applies to the following samples:

Method: SW846 8260B

D54726-1, D54726-2

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	0.25	ug/l	
108-88-3	Toluene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	3.0	2.0	ug/l	
	TPH-GRO (C6-C10)	ND	200	200	ug/l	

CAS No.	Surrogate Recoveries	Limits
17060-07-0	1,2-Dichloroethane-D4	103% 62-130%
2037-26-5	Toluene-D8	100% 70-130%
460-00-4	4-Bromofluorobenzene	87% 69-130%

Blank Spike Summary

Page 1 of 1

Job Number: D54726
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: PA 334-32 BWQ R06 317B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7V1378-BS	7V24862.D	1	02/03/14	JL	n/a	n/a	V7V1378

The QC reported here applies to the following samples:

Method: SW846 8260B

D54726-1, D54726-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	47.9	96	70-130
100-41-4	Ethylbenzene	50	46.2	92	70-130
108-88-3	Toluene	50	46.6	93	70-130
1330-20-7	Xylene (total)	150	137	91	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	104%	62-130%
2037-26-5	Toluene-D8	95%	70-130%
460-00-4	4-Bromofluorobenzene	104%	69-130%

* = Outside of Control Limits.

Blank Spike Summary

Page 1 of 1

Job Number: D54726
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: PA 334-32 BWQ R06 317B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7V1378-BS	7V24863.D	1	02/03/14	JL	n/a	n/a	V7V1378

The QC reported here applies to the following samples:

Method: SW846 8260B

D54726-1, D54726-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
	TPH-GRO (C6-C10)	2200	2110	96	39-144

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

* = Outside of Control Limits.

Matrix Spike Summary

Page 1 of 1

Job Number: D54726
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: PA 334-32 BWQ R06 317B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D54742-1MS ^a	7V24870.D	50	02/03/14	JL	n/a	n/a	V7V1378
D54742-1 ^a	7V24872.D	50	02/03/14	JL	n/a	n/a	V7V1378

The QC reported here applies to the following samples:

Method: SW846 8260B

D54726-1, D54726-2

CAS No.	Compound	D54742-1 ug/l	Spike Q	MS ug/l	MS %	Limits
71-43-2	Benzene	153	2500	2770	105	62-130
100-41-4	Ethylbenzene	2270	2500	4730	98	63-130
108-88-3	Toluene	164	2500	2570	96	60-130
1330-20-7	Xylene (total)	2340	7500	9490	95	67-130

CAS No.	Surrogate Recoveries	MS	D54742-1	Limits
17060-07-0	1,2-Dichloroethane-D4	103%	98%	62-130%
2037-26-5	Toluene-D8	95%	99%	70-130%
460-00-4	4-Bromofluorobenzene	101%	91%	69-130%

(a) The pH of the sample aliquot for VOA analysis was > 2 at time of analysis.

* = Outside of Control Limits.

Matrix Spike Summary

Page 1 of 1

Job Number: D54726
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: PA 334-32 BWQ R06 317B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D54742-1MS ^a	7V24871.D	50	02/03/14	JL	n/a	n/a	V7V1378
D54742-1 ^a	7V24872.D	50	02/03/14	JL	n/a	n/a	V7V1378

The QC reported here applies to the following samples:

Method: SW846 8260B

D54726-1, D54726-2

CAS No.	Compound	D54742-1 ug/l	Spike Q ug/l	MS ug/l	MS %	Limits
	TPH-GRO (C6-C10)	16100	110000	132000	105	19-168

CAS No.	Surrogate Recoveries	MS	D54742-1	Limits
17060-07-0	1,2-Dichloroethane-D4	99%	98%	62-130%
2037-26-5	Toluene-D8	98%	99%	70-130%
460-00-4	4-Bromofluorobenzene	96%	91%	69-130%

(a) The pH of the sample aliquot for VOA analysis was > 2 at time of analysis.

* = Outside of Control Limits.

Duplicate Summary

Page 1 of 1

Job Number: D54726
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: PA 334-32 BWQ R06 317B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D54704-1DUP	7V24865.D	1	02/03/14	JL	n/a	n/a	V7V1378
D54704-1	7V24864.D	1	02/03/14	JL	n/a	n/a	V7V1378

The QC reported here applies to the following samples:

Method: SW846 8260B

D54726-1, D54726-2

CAS No.	Compound	D54704-1 ug/l	DUP Q	ug/l	Q	RPD	Limits
71-43-2	Benzene	ND		ND		nc	30
100-41-4	Ethylbenzene	0.85	J	0.39	J	74* a	30
108-88-3	Toluene	1.5	J	ND		200* a	30
1330-20-7	Xylene (total)	5.1		ND		200* a	30
	TPH-GRO (C6-C10)	ND		ND		nc	30

CAS No.	Surrogate Recoveries	DUP	D54704-1	Limits
17060-07-0	1,2-Dichloroethane-D4	100%	100%	62-130%
2037-26-5	Toluene-D8	97%	100%	70-130%
460-00-4	4-Bromofluorobenzene	90%	90%	69-130%

(a) High RPD due to possible sample nonhomogeneity.

* = Outside of Control Limits.

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Page 1 of 1

Job Number: D54726
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: PA 334-32 BWQ R06 317B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9338-MB	3G17943.D	1	02/04/14	DC	02/04/14	OP9338	E3G892

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D54726-1

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.20	0.050	ug/l	
208-96-8	Acenaphthylene	ND	0.20	0.050	ug/l	
120-12-7	Anthracene	ND	0.20	0.050	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.10	0.050	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.10	0.050	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	0.050	ug/l	
218-01-9	Chrysene	ND	0.10	0.050	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	0.050	ug/l	
206-44-0	Fluoranthene	ND	0.20	0.050	ug/l	
86-73-7	Fluorene	ND	0.20	0.050	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	0.070	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.20	0.075	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	0.075	ug/l	
91-20-3	Naphthalene	ND	0.20	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.20	0.050	ug/l	
129-00-0	Pyrene	ND	0.20	0.050	ug/l	

CAS No.	Surrogate Recoveries	Limits
4165-60-0	Nitrobenzene-d5	67% 20-130%
321-60-8	2-Fluorobiphenyl	55% 20-130%
1718-51-0	Terphenyl-d14	88% 10-133%

Blank Spike Summary

Page 1 of 1

Job Number: D54726
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: PA 334-32 BWQ R06 317B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9338-BS	3G17944.D	1	02/04/14	DC	02/04/14	OP9338	E3G892

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D54726-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
83-32-9	Acenaphthene	2.5	1.9	76	44-130
208-96-8	Acenaphthylene	2.5	1.7	68	44-130
120-12-7	Anthracene	2.5	1.7	68	54-130
56-55-3	Benzo(a)anthracene	2.5	1.7	68	60-130
205-99-2	Benzo(b)fluoranthene	2.5	1.8	72	42-132
207-08-9	Benzo(k)fluoranthene	2.5	2.0	80	60-130
191-24-2	Benzo(g,h,i)perylene	2.5	2.1	84	47-130
50-32-8	Benzo(a)pyrene	2.5	1.7	68	57-130
218-01-9	Chrysene	2.5	2.1	84	70-130
53-70-3	Dibenzo(a,h)anthracene	2.5	1.9	76	44-130
206-44-0	Fluoranthene	2.5	1.9	76	59-130
86-73-7	Fluorene	2.5	1.7	68	48-130
193-39-5	Indeno(1,2,3-cd)pyrene	2.5	1.9	76	48-130
90-12-0	1-Methylnaphthalene	2.5	2.2	88	39-130
91-57-6	2-Methylnaphthalene	2.5	1.7	68	41-130
91-20-3	Naphthalene	2.5	1.9	76	34-130
85-01-8	Phenanthrene	2.5	2.1	84	54-130
129-00-0	Pyrene	2.5	2.1	84	63-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	93%	20-130%
321-60-8	2-Fluorobiphenyl	67%	20-130%
1718-51-0	Terphenyl-d14	87%	10-133%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D54726
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: PA 334-32 BWQ R06 317B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9338-MS	3G17946.D	1	02/04/14	DC	02/04/14	OP9338	E3G892
OP9338-MSD	3G17947.D	1	02/04/14	DC	02/04/14	OP9338	E3G892
D54736-2	3G17945.D	1	02/04/14	DC	02/04/14	OP9338	E3G892

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D54726-1

CAS No.	Compound	D54736-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		2.5	1.6	64	1.4	56	13	31-130/30
208-96-8	Acenaphthylene	ND		2.5	1.3	52	1.2	48	8	28-130/30
120-12-7	Anthracene	ND		2.5	1.7	68	1.4	56	19	37-130/30
56-55-3	Benzo(a)anthracene	ND		2.5	1.7	68	1.4	56	19	49-130/30
205-99-2	Benzo(b)fluoranthene	ND		2.5	1.8	72	1.4	56	25	28-130/30
207-08-9	Benzo(k)fluoranthene	ND		2.5	1.8	72	1.7	68	6	45-130/30
191-24-2	Benzo(g,h,i)perylene	ND		2.5	1.2	48	1.1	44	9	10-130/30
50-32-8	Benzo(a)pyrene	ND		2.5	1.7	68	1.4	56	19	42-130/30
218-01-9	Chrysene	ND		2.5	2.1	84	1.8	72	15	56-130/30
53-70-3	Dibenzo(a,h)anthracene	ND		2.5	1.1	44	0.96	38	14	10-130/30
206-44-0	Fluoranthene	ND		2.5	1.9	76	1.6	64	17	47-130/30
86-73-7	Fluorene	ND		2.5	1.4	56	1.3	52	7	34-130/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		2.5	1.2	48	1.0	40	18	11-130/30
90-12-0	1-Methylnaphthalene	0.077	J	2.5	1.8	69	1.7	65	6	28-130/30
91-57-6	2-Methylnaphthalene	ND		2.5	1.3	52	1.1	44	17	26-130/30
91-20-3	Naphthalene	ND		2.5	1.5	60	1.3	52	14	26-130/30
85-01-8	Phenanthrene	ND		2.5	2.0	80	1.8	72	11	39-130/30
129-00-0	Pyrene	ND		2.5	2.1	84	1.7	68	21	53-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D54736-2	Limits
4165-60-0	Nitrobenzene-d5	64%	61%	87%	20-130%
321-60-8	2-Fluorobiphenyl	52%	46%	70%	20-130%
1718-51-0	Terphenyl-d14	79%	70%	87%	10-133%

* = Outside of Control Limits.

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: D54726
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: PA 334-32 BWQ R06 317B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9337-MB	FH017798.D	1	02/03/14	JS	02/03/14	OP9337	GFH879

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

D54726-1

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	61% 10-130%

Blank Spike Summary

Page 1 of 1

Job Number: D54726
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: PA 334-32 BWQ R06 317B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9337-BS	FH017800.D	1	02/03/14	JS	02/03/14	OP9337	GFH879

The QC reported here applies to the following samples:

Method: SW846-8015B

D54726-1

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH-DRO (C10-C28)	20	11.5	58	33-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	59%	10-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D54726
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: PA 334-32 BWQ R06 317B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9337-MS	FH017802.D	1	02/03/14	JS	02/03/14	OP9337	GFH879
OP9337-MSD	FH017804.D	1	02/03/14	JS	02/03/14	OP9337	GFH879
D54519-26	FH017806.D	1	02/03/14	JS	02/03/14	OP9337	GFH879

The QC reported here applies to the following samples:

Method: SW846-8015B

D54726-1

CAS No.	Compound	D54519-26 mg/l	Spike Q	MS mg/l	MS %	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	ND	20	12.6	63	13.8	69	9	33-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D54519-26	Limits
84-15-1	o-Terphenyl	72%	83%	75%	10-130%

* = Outside of Control Limits.

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: D54726
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: PA 334-32 BWQ R06 317B

QC Batch ID: MP12245
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 02/03/14

Metal	RL	IDL	MDL	MB raw	final
Aluminum	100	11	11		
Antimony	30	2.1	21		
Arsenic	25	3.8	9	1.0	<25
Barium	10	.2	1.4	-0.10	<10
Beryllium	10	.9	1.7		
Boron	50	.8	6.6		
Cadmium	10	.2	.36		
Calcium	400	2.4	66	14.9	<400
Chromium	10	.3	1.4	-0.10	<10
Cobalt	5.0	.5	.51		
Copper	10	.8	1.5		
Iron	10	1.5	3.2	0.40	<10
Lead	50	2.1	4.1		
Lithium	5.0	.4	1.9		
Magnesium	200	6.8	29	23.5	<200
Manganese	5.0	.5	.29		
Molybdenum	10	.4	1.1		
Nickel	30	.5	.87		
Phosphorus	100	15	24		
Potassium	1000	99	230	107	<1000
Selenium	50	7.1	9.3	-2.6	<50
Silicon	50	4.7	5.6		
Silver	30	.3	.4		
Sodium	400	7.3	36	33.5	<400
Strontium	5.0	.01	.12		
Thallium	10	1.8	4.9		
Tin	50	12	13		
Titanium	10	.1	.43		
Uranium	50	2.9	3.9		
Vanadium	10	.4	.39		
Zinc	30	.4	1.9		

Associated samples MP12245: D54726-1F

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D54726
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: PA 334-32 BWQ R06 317B

QC Batch ID: MP12245
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D54726
 Account: WILLCOF - WPX Energy Rocky Mountain, LLC
 Project: WWLCOGJ: PA 334-32 BWQ R06 317B

QC Batch ID: MP12245
 Matrix Type: AQUEOUS

Methods: EPA 200.7
 Units: ug/l

Prep Date: 02/03/14

Metal	D54725-1 Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	0.0	1090	1000	109.0	70-130
Barium	17.8	2000	2000	99.1	70-130
Beryllium					
Boron					
Cadmium	anr				
Calcium	3660	31000	25000	109.4	70-130
Chromium	0.70	544	500	108.7	70-130
Cobalt					
Copper					
Iron	337	5480	5000	102.9	70-130
Lead	anr				
Lithium					
Magnesium	405	26100	25000	102.8	70-130
Manganese	anr				
Molybdenum					
Nickel					
Phosphorus					
Potassium	808	26000	25000	100.8	70-130
Selenium	0.0	1110	1000	111.0	70-130
Silicon					
Silver					
Sodium	2640	27700	25000	100.2	70-130
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP12245: D54726-1F

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D54726
Account: WILLCOF - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: PA 334-32 BWQ R06 317B

QC Batch ID: MP12245
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date:

Metal

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D54726
 Account: WILLCOF - WPX Energy Rocky Mountain, LLC
 Project: WWLCOGJ: PA 334-32 BWQ R06 317B

QC Batch ID: MP12245
 Matrix Type: AQUEOUS

Methods: EPA 200.7
 Units: ug/l

Prep Date: 02/03/14

Metal	D54725-1 Original	MSD	Spikelet ICPAL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	0.0	1120	1000	112.0	2.7	20
Barium	17.8	2070	2000	102.6	3.4	20
Beryllium						
Boron						
Cadmium	anr					
Calcium	3660	31300	25000	110.6	1.0	20
Chromium	0.70	549	500	109.7	0.9	20
Cobalt						
Copper						
Iron	337	5630	5000	105.9	2.7	20
Lead	anr					
Lithium						
Magnesium	405	26800	25000	105.6	2.6	20
Manganese	anr					
Molybdenum						
Nickel						
Phosphorus						
Potassium	808	26800	25000	104.0	3.0	20
Selenium	0.0	1150	1000	115.0	3.5	20
Silicon						
Silver						
Sodium	2640	28400	25000	103.0	2.5	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP12245: D54726-1F

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D54726
Account: WILLCOF - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: PA 334-32 BWQ R06 317B

QC Batch ID: MP12245
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date:

Metal

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D54726

Account: WILLCOP - WPX Energy Rocky Mountain, LLC

Project: WWLCOGJ: PA 334-32 BWQ R06 317B

QC Batch ID: MP12245

Methods: EPA 200.7

Matrix Type: AQUEOUS

Units: ug/l

Prep Date: 02/03/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	1110	1000	111.0	85-115
Barium	1980	2000	99.0	85-115
Beryllium				
Boron				
Cadmium	anr			
Calcium	27800	25000	111.2	85-115
Chromium	545	500	109.0	85-115
Cobalt				
Copper				
Iron	5070	5000	101.4	85-115
Lead	anr			
Lithium				
Magnesium	25700	25000	102.8	85-115
Manganese	anr			
Molybdenum				
Nickel				
Phosphorus				
Potassium	25500	25000	102.0	85-115
Selenium	1170	1000	117.0*(a	85-115
Silicon				
Silver				
Sodium	25100	25000	100.4	85-115
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP12245: D54726-1F

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D54726
Account: WILLCOF - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: PA 334-32 BWQ R06 317B

QC Batch ID: MP12245
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested
(a) All sample results < RL.

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: D54726
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: PA 334-32 BWQ R06 317B

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Bicarbonate as CaC	GN23578	5.0	0.0	mg/l	100	95.6	95.6	90-110%
Alkalinity, Carbonate	GN23579	5.0	0.0	mg/l	100	95.6	95.6	80-120%
Alkalinity, Total as CaCO3	GN23575	5.0	0.0	mg/l	100	95.6	95.6	90-110%
Bromide	GP11882/GN23508	0.050	0.0	mg/l	0.5	0.514	102.8	90-110%
Chloride	GP11882/GN23508	0.50	0.0	mg/l	5	4.86	97.2	90-110%
Fluoride	GP11882/GN23508	0.10	0.0	mg/l	1	1.02	102.0	90-110%
Nitrogen, Nitrate	GP11882/GN23508	0.010	0.0	mg/l	0.1	0.101	101.0	90-110%
Nitrogen, Nitrite	GP11882/GN23508	0.0040	0.0	mg/l	0.05	0.0512	102.4	90-110%
Solids, Total Dissolved	GN23524	10	0.0	mg/l	400	411	102.8	90-110%
Specific Conductivity	GP11890/GN23530			umhos/cm	99.5	97.9	98.4	90-110%
Sulfate	GP11882/GN23508	0.50	0.0	mg/l	5	5.15	103.0	90-110%
pH	GN23532			su	8.00	8.00	100.0	99.3-100.7%

Associated Samples:

Batch GN23524: D54726-1
Batch GN23532: D54726-1
Batch GN23575: D54726-1
Batch GN23578: D54726-1
Batch GN23579: D54726-1
Batch GP11882: D54726-1
Batch GP11890: D54726-1
(*) Outside of QC limits

10.1
10

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D54726
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: PA 334-32 BWQ R06 317B

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO ₃	GN23575	D54712-11A	mg/l	162	162	0.5	0-20%
Solids, Total Dissolved	GN23524	D54661-8	mg/l	690	692	0.3	0-20%
Specific Conductivity	GP11890/GN23530	D54704-1	umhos/cm	563	570	1.2	0-20%

Associated Samples:

Batch GN23524: D54726-1

Batch GN23575: D54726-1

Batch GP11890: D54726-1

(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D54726
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: PA 334-32 BWQ R06 317B

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO ₃	GN23575	D54712-11A	mg/l	162	100	258	95.4	80-120%
Bromide	GP11882/GN23508	D54710-1	mg/l	0.0	0.5	0.59	101.8	80-120%
Bromide	GP11882/GN23508	D54710-1	mg/l	0.081	0.5	0.59	101.8	80-120%
Chloride	GP11882/GN23508	D54710-1	mg/l	20.0	5	25.3	106.0	80-120%
Chloride	GP11882/GN23508	D54710-1	mg/l	19.1	5	25.3	106.0	80-120%
Fluoride	GP11882/GN23508	D54710-1	mg/l	1.3	1	2.3	100.0	80-120%
Fluoride	GP11882/GN23508	D54710-1	mg/l	1.4	1	2.3	100.0	80-120%
Nitrogen, Nitrate	GP11882/GN23508	D54710-1	mg/l	0.0	0.5	0.54	108.0	80-120%
Nitrogen, Nitrate	GP11882/GN23508	D54710-1	mg/l	0.0	0.5	0.54	108.0	80-120%
Nitrogen, Nitrite	GP11882/GN23508	D54710-1	mg/l	0.0	0.05	0.043	86.0	80-120%
Nitrogen, Nitrite	GP11882/GN23508	D54710-1	mg/l	0.0	0.05	0.043	86.0	80-120%
Sulfate	GP11882/GN23508	D54710-1	mg/l	75.6	25	103	109.6	80-120%
Sulfate	GP11882/GN23508	D54710-1	mg/l	72.6	25	103	109.6	80-120%

Associated Samples:

Batch GN23575: D54726-1

Batch GP11882: D54726-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D54726
Account: WILLCOG - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: PA 334-32 BWQ R06 317B

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Alkalinity, Total as CaCO ₃	GN23575	D54712-11A	mg/l	162	100	256	1.4	20%
Bromide	GP11882/GN23508	D54710-1	mg/l	0.0	0.5	0.59	0.0	20%
Bromide	GP11882/GN23508	D54710-1	mg/l	0.081	0.5	0.59	0.0	20%
Chloride	GP11882/GN23508	D54710-1	mg/l	20.0	5	25.3	0.0	20%
Chloride	GP11882/GN23508	D54710-1	mg/l	19.1	5	25.3	0.0	20%
Fluoride	GP11882/GN23508	D54710-1	mg/l	1.3	1	2.2	4.4	20%
Fluoride	GP11882/GN23508	D54710-1	mg/l	1.4	1	2.2	4.4	20%
Nitrogen, Nitrate	GP11882/GN23508	D54710-1	mg/l	0.0	0.5	0.52	3.8	20%
Nitrogen, Nitrate	GP11882/GN23508	D54710-1	mg/l	0.0	0.5	0.52	3.8	20%
Nitrogen, Nitrite	GP11882/GN23508	D54710-1	mg/l	0.0	0.05	0.044	2.3	20%
Nitrogen, Nitrite	GP11882/GN23508	D54710-1	mg/l	0.0	0.05	0.044	2.3	20%
Sulfate	GP11882/GN23508	D54710-1	mg/l	75.6	25	102	1.0	20%
Sulfate	GP11882/GN23508	D54710-1	mg/l	72.6	25	102	1.0	20%

Associated Samples:

Batch GN23575: D54726-1

Batch GP11882: D54726-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits