



Western Water & Land, Inc.

September 26, 2013

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

**RE: GM 23-34 Drill Pad Baseline Results Report, June 2013 Event**

Dear Mr. Danforth,

Western Water & Land, Inc. (WWL) has completed the initial baseline water sampling for the WPX Energy Rocky Mountain LLC (WPX) GM 23-34 drill pad in accordance with COGCC Rule 609. The GM 23-34 drill pad is located in NE  $\frac{1}{4}$ , SW  $\frac{1}{4}$  Section 34, Township 6 South, Range 96 West, 6<sup>th</sup> PM.

In accordance with Rule 609, the baseline water quality evaluation considered all water sources (domestic wells or springs) within a 0.5-mile radius of the referenced drill pad (oil and gas location). A preliminary screening of the groundwater sources was completed to identify the sources that are potentially available for sampling pending the consent of the structure owners. Each potentially available water source was then evaluated to identify the preferred sources for the baseline program. If the number of potentially available sources was four or less, all of the sources were included in the list of preferred sources. If more than four sources were potentially available, the sources were prioritized based on WWL's hydrologic expertise and in accordance with Rule 609. A complete description of the water source evaluation process and results are provided in the water source evaluation report (Baseline Water Quality Sampling Evaluation – GM 23-34 Drill Pad, May 8, 2013).

This report summarizes the field sampling activities, sampling locations, and quality control and water chemistry results.

**FIELD SAMPLING ACTIVITIES**

As described in the Baseline Water Quality Sampling Evaluation (GM 23-34 Drill Pad, May 8, 2013), 18 potential sampling locations were identified for field sampling of water quality consistent with requirements of Rule 609. According to state records, the landowners, water well permit holders or water right holders were mailed access request letters by way of certified U.S. Postal Service mail. Four wells were identified as preferred sampling locations: Water Well Permit No. 44425, Water Well Permit No. 166690, Water Well Permit No. 27547-F, and Water Well Permit No. 166695. WPX was granted permission to sample Water Well Permit No. 44425-F. The well owner, Puckett Land Company, indicated in their access response that the Sherwood Well No. 1 water right, Water Well Permit No. 44425, and Water Well Permit No. 44425-F all correspond to the same well.

One sample was collected for the GM 23-34 Drill Pad from the permitted well 44425-F on June 27, 2013; the assigned field sample ID was GM 23-34-44425. Upon arrival to the Puckett Land Company

property, no residents were present; WWL personnel located the well and began purging. Three casing volumes were purged prior to sampling. See Figure 1 for the sampled location. Photographs of the sampling site are shown in Attachment A.

All sampling procedures followed the Colorado Oil & Gas Conservation Commission (COGCC) Model Sampling and Analysis Plan (SAP) protocols. Sampling Method 1 for wells with pumps and effervescent samples, described in Version 1 of the COGCC Model SAP, was used to collect this sample.

Samples were carefully packed in plastic ice chests (coolers) with ice and shipped to the analytical laboratory (ALS Laboratory, Fort Collins, Colorado) 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 the assignment of data qualifiers. In addition, WWL conducted quality control evaluations of cation-anion balance (CAB) and total dissolved solids (calculated/measured ratio), and assigned additional qualifiers to analytical results as necessary.

### **Field Procedures**

WWL conducted field sampling procedures in accordance with the COGCC Model SAP. Sample GM 23-34-44425 (Water Well Permit No. 44425-F) was sampled by direct filling methods; dissolved gas sampling was conducted using Method 1 for wells with pumps and effervescent samples. No field procedure deviations or incidents 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 609. DRO (diesel range organics) and GRO (gasoline range organics) were designated on the COC in place of TPH, a required analysis for Rule 609. No other errors or pertinent information was observed, and no corrections were needed.

### **Sample Receipt**

The sample was received in a single cooler within the temperature range criteria ( $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ ). Custody seals were intact. The lab receipt form noted that the Trip Blank was present but not listed on the COC, and one or more bottles associated with VOC, GRO, RSK/MEE or Rx CN/S were received with headspace less than pea size. However, the individual analytical reports stated that samples were free of headspace for the VOC and GRO analysis. No qualifiers were assigned due to sample receipt conditions.

### **Holding Times**

All analyses were conducted within recommended holding times with the exception of nitrate as N and nitrite as N. Due to a power outage, the lab was unable to analyze nitrate and nitrite within the 48-hour analysis holding time. ALS reported the holding time information in the narrative section of the results, but did not designate an "H" qualifier in the numerical results section. WWL has designated an H qualifier in the final results for nitrate and nitrite; these results are considered estimated.

### **Analytical Methods**

The analytical methods used by the laboratory 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: Total phosphorous was analyzed using Method 365.2. Volatile organics and Gasoline Range Organics (TPH volatiles) were analyzed using Method SW8260\_25 Revision C (purge and trap, Method 5030C). Diesel Range Organics (TPH extractables) were analyzed according to SW846 8000C and 8015D.

#### **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. All analyzed metals had dilution factors of 10. Chloride had a dilution factor of 10, and sulfate had a dilution factor of 20. Reduced aliquots were taken of the sample for the alkalinity, bicarbonate, and carbonate and TDS analysis. Reporting limits were elevated accordingly. ALS reports samples at the detection limit as “undetected” or “U” rather than reporting results as less than the detection reporting limit, e.g. < 0.05ug/L.

#### **Completeness**

Data completeness is a measure of requested analysis and received results. The analytical constituents required under Rule 609 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 in Rule 609. All requested analytical data matched the laboratory reported data results; data completeness is considered 100 percent.

#### **Cation-Anion Balance**

The cation-anion balance (CAB) calculates 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 each sample; if the CAB exceeded 5 percent, i.e. < 95 percent or >105 percent, 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 10 percent, and may assign a qualifier for CAB percentages between 5 and less than 10 percent. The CAB calculation for sample GM 23-34-44425 showed a result of 2.4 (see Attachment B, Data Quality Review Sheet). The analytical results for cations and anions for the samples were not qualified on the basis of the CAB.

#### **TDS**

The ratio of laboratory-measured TDS versus calculated TDS were computed and ratios greater than 1.20 for a sample are cause for a review of major ion reporting errors.

In general, WWL will assign a qualifier (an estimated result) when TDS ratios are 1.5 or greater, and may assign a qualifier for TDS ratios between 1.2 and less than 1.5. The TDS calculation for sample GM 23-34-44425 showed a ratio of 1.16 percent. No sample results were rejected on the basis of the TDS ratio. No qualifiers were assigned 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 using the calculation of the relative percent difference (RPD) using the analytical results from the original investigative sample and the duplicate sample. The qualification criteria were considered an RPD limit of 35 percent. No field duplicates were collected for this sampling event, therefore no field duplicate RPDs were calculated.

### **Laboratory Quality Control**

The analytical laboratory conducts an extensive quality control program and as part of the overall quality control process, WWL verified that the lab performed and reported quality control data correctly. This included checking laboratory control samples for a laboratory acceptance criteria of  $\pm 20$  percent and reviewing percent recoveries of analytical spike and analytical spike duplicates and other control samples. Typical percent recovery acceptance limits are 70 to 130 percent. All sampling event data packages from the lab showed that no laboratory control samples exceeded the 20 percent criteria without data qualification.

All matrix spike recoveries were within the acceptance criteria.

All other laboratory quality control standards were met within the established laboratory acceptance criteria.

### **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. No qualifiers were assigned by the laboratory because of percent recoveries exceeding the laboratory acceptance criteria.

### **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. The RPDs were compared to the laboratory acceptance limit of 20 percent. RPDs were not used when the sample concentration was too low ( $< 10X$  MDL) for accurate evaluation. No qualifiers were assigned by the laboratory because of RPD values exceeding the laboratory acceptance criteria. Data Quality Review Sheets are presented in Attachment B.

### **Summary**

ALS Laboratories assigned analytical results that were undetected with a "U" qualifier, and a "J" for results considered estimated because they were detected above the method detection limit but below the reporting limit. WWL assigned the qualifier "H" to analytes not meeting holding times; these results are considered estimated. No other quality control qualifiers were assigned to the analytical results by ALS Laboratories and WWL. See Attachment C for individual parameters that were qualified.

### **ANALYTICAL RESULTS**

Laboratory analysis was performed by ALS Environmental (ALS), in Fort Collins, Colorado, in accordance with the analytical schedule described in COGCC Rule 609. The analytical results are summarized in Attachment C; the data are qualified as indicated. A geochemical interpretation of the analytical results can be provided upon request.

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

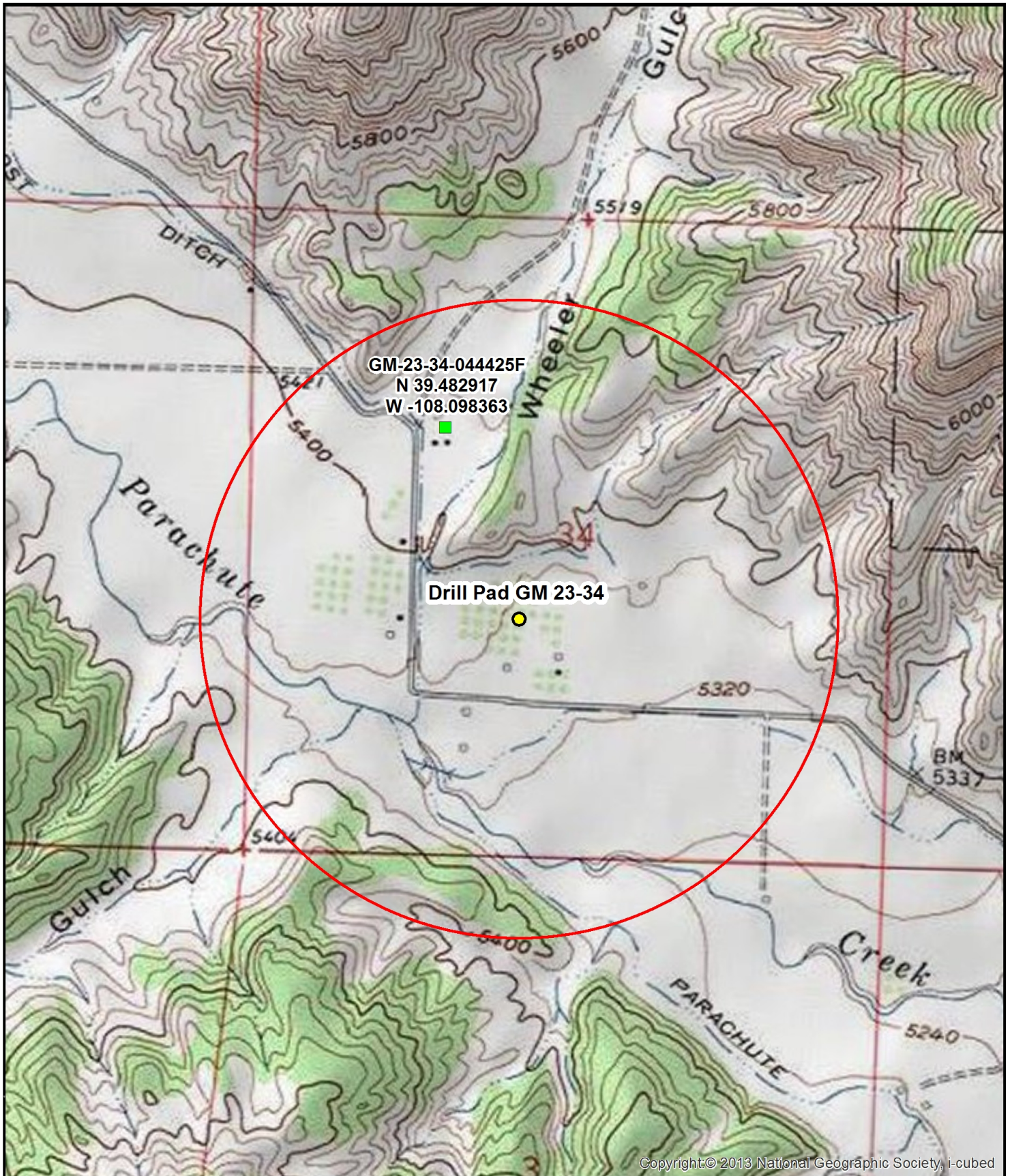
Sincerely,



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

Attachments

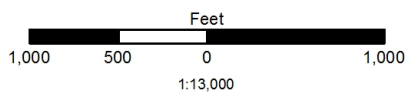
Figure 1- Sampling Location Map  
Attachment A - Photographs  
Attachment B - Data Quality Review Sheets  
Attachment C - Summary of Analytical Results  
Attachment D - Field Monitoring Forms  
Attachment E - Laboratory Analytical Summary Report



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**Legend**

- Sample Location(s)
- Drill Pad GM 23-34
- 0.5-Mile Radius Evaluation Area



**Figure 1: Drill Pad Location GM 23-34  
0.5 Mile Radius Water Source Evaluation  
NE1/4, SW1/4, S34, T6S, R96W, 6 PM**

Garfield County, Colorado

WPX Energy Rocky Mountain LLC

Basemap Source: Bing Maps and Esri ArcGIS Online



Western Water & Land, Inc.  
Applications in Earth Science

**ATTACHMENT A**

**Photographs**



**Photo 1. Puckett Well Sampling Location (GM 23-34-44425F)**



**Photo 2. Puckett Well Sampling Location (GM 23-34-44425F); Concrete Tank Approximately 100'  
From Well**

**ATTACHMENT B**

**Data Quality Review Sheets**

## DATA QUALITY REVIEW SHEET

Facility ID:	752710	Project:	WPX GM 23-34 BWQ
Station Name:	Puckett 44425F	Lab Work Order:	1306420
Sample Date:	6/27/2013	QA/QC Review Date:	9/16/2013
Field Sample ID:	GM 23-34-44425	Reviewer:	J. Pahler

Field Sampling Data Review	Yes	No	N/A
1. Well properly purged?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Flow rate reduced prior to sampling?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Lab qualifiers for data (other than non-detect)? <i>List in comments.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Are corrective actions required? <i>If yes, please list actions and dates to be completed by:</i>	<input type="checkbox"/>	<input 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)	2.4	N/A	N/A	±5%	<input checked="" type="checkbox"/>
Total Dissolved Solids, mg/L (TDS)	1396	1200	1.16	0.9 – 1.1	<input type="checkbox"/>
Specific Conductance, µS/cm (SpC)	1791	1742	1.03	0.9 – 1.1	<input checked="" type="checkbox"/>

**Comments:**

Trip Blank not listed on COC; Nitrate and Nitrate analyzed out of holding time due to lab power outage, assigned the qualifier "H" for estimated value; VOAs received with headspace < pea-size (lab narrative declares no headspace), no qualifiers assigned; Trip Blank value for GRO was detected above the MDL and below RL, qualifier "J" assigned for estimated value. No qualifier assigned on basis of TDS calculation.

**ATTACHMENT C**

**Summary of Analytical Results**

GM 23-34 BWQ Analytical Results Summary														
Facility ID			752710						752710					
Station Name			Puckett 44425F						Trip Blank					
FieldSampleID			GM 23-34-44425						Trip Blank					
LabSampleID			1306420-1						1306420-2					
Sample Date			6/27/2013						6/27/2013					
	ReportingUnits	AnalyticMethod	Result	Lab Qual	WWL Qual	RL	MDL	DF	Result	Lab Qual	WWL Qual	RL	MDL	DF
<b>Bacteria<sup>1</sup></b>														
Iron Related Bacteria	nu	BART	0	U		1		1						
Slime forming bacteria	nu	BART	0	U		1		1						
Sulfate Reducing Bacteria	nu	BART	0	U		1		1						
<b>Dissolved Gases</b>														
Ethane	ug/l	RSK175	2	U		2	2	1						
Methane	ug/l	RSK175	1	U		1	1	1						
Propane	ug/l	RSK175	1	U		1	1	1						
<b>Dissolved Metals</b>														
Barium	ug/l	EPA200.8	17			1	0.3	10						
Boron	ug/l	EPA200.8	100			50	15	10						
Calcium	ug/l	EPA200.8	120000			1000	65	10						
Iron (Ferric)	ug/l	EPA200.8	2000			100	30	10						
Magnesium	ug/l	EPA200.8	72000			100	30	10						
Manganese	ug/l	EPA200.8	230			2	0.6	10						
Potassium	ug/l	EPA200.8	4100			1000	300	10						
Selenium	ug/l	EPA200.8	1	U		1	0.5	10						
Sodium	ug/l	EPA200.8	180000			1000	300	10						
Strontium	ug/l	EPA200.8	1800			1	0.3	10						
<b>Field_Parameters</b>														
Bubbles	nu	Field	None					1						
Color	nu	Field	Clear					1						
Conductivity, Field	uS/cm	Field	1470					1						
Depth to Water	ft	Field	58.84					1						
Discharge, measured	gpm	Field	6.86					1						
Dissolved Oxygen, Field	mg/l	Field	1.25					1						
Dissolved Oxygen, Field,%	%	Field	2.6					1						
Effervescence	nu	Field	Slight					1						
Odor	nu	Field	None					1						
ORP, field	mv	Field	-153.7					1						
pH, Field	s.u.	Field	7.46					1						
Specific Conductivity, Field	uS/cm	Field	1751					1						
Temperature, Water	Deg C	Field	16.5					1						
Turbidity, field	NTUs	Field	6.53					1						
<b>Inorganics</b>														
Bicarbonate as CaCO3	mg/l	SM2320B	460			20		1						
Bromide	mg/l	EPA300.0	0.2	U		0.2	0.06	1						
Carbonate as CaCO3	mg/l	SM2320B	20	U		20		1						
Chloride	mg/l	EPA300.0	25			2	0.6	10						
Fluoride	mg/l	EPA300.0	1			0.1	0.03	1						
Nitrate as N	mg/l	EPA300.0	0.2	U	H	0.2	0.06	1						
Nitrite as N	mg/l	EPA300.0	0.1	U	H	0.1	0.03	1						
pH	s.u.	SM4500-H	7.49			0.1		1						
Specific Conductivity	umhos/cm	SM2510B	1742			1		1						
Sulfate	mg/l	EPA300.0	530			20	6	20						
Total Alkalinity AS CaCO3	mg/l	SM2320B	460			20		1						
Total Dissolved Solids	mg/l	SM2540C	1200			40		1						
Total Phosphorous	mg/l	EPA365.2	0.05	U		0.05	0.015	1						

GM 23-34 BWQ Analytical Results Summary														
Facility ID			752710						752710					
Station Name			Puckett 44425F						Trip Blank					
FieldSampleID			GM 23-34-44425						Trip Blank					
LabSampleID			1306420-1						1306420-2					
Sample Date			6/27/2013						6/27/2013					
	ReportingUnits	AnalyticMethod	Result	Lab Qual	WWL Qual	RL	MDL	DF	Result	Lab Qual	WWL Qual	RL	MDL	DF
<b>Organics</b>														
Diesel Range Organics	mg/l	SW8015M	0.5	U		0.5	0.15	1						
Gasoline Range Organics	ug/l	SW8260_25	100	U		100	30	1	32	J		100	30	1
<b>VOAs</b>														
Benzene	ug/l	SW8260_25	1	U		1	0.3	1	1	U		1	0.3	1
Ethylbenzene	ug/l	SW8260_25	1	U		1	0.3	1	1	U		1	0.3	1
M+P-Xylene	ug/l	SW8260_25	1	U		1	0.3	1	1	U		1	0.3	1
o-Xylene	ug/l	SW8260_25	1	U		1	0.3	1	1	U		1	0.3	1
Toluene	ug/l	SW8260_25	1	U		1	0.3	1	1	U		1	0.3	1

Notes:

U = not detected at the reporting limit

NM = not measured

J = estimated; value between RL and MDL

H = estimated, analyzed outside of holding time

<sup>1</sup> A result of 1 indicates the presence of bacteria

**ATTACHMENT D**

**Field Monitoring Forms**

### Groundwater Monitoring Field Form

Facility/Site: <u>GM 23-34</u>	Date: <u>6-27-13</u>	Observer: <u>Shelby</u>
Station/Well: <u>GM 23-34-44425F</u>	Start Time: <u>1305</u>	Sampling
Location: <u>well ~100yds from house</u>	End Time: <u>1515</u>	Team: <u>MWS, SLG</u>
Description: _____		Lead Signature: <u>[Signature]</u>
Project: <u>WPX bwa</u>		Date: <u>7/31/13</u>
Sampling Instruments: <u>YSI</u>		

#### Well Purging Information

Well Depth (d<sub>i</sub>): 80 ft    Static depth to water (d<sub>w</sub>): 58.84 ft    Sample/Set Depth: \_\_\_\_\_ ft  
 Bore radius (r<sub>w</sub>): \_\_\_\_\_ in/ft    Bore volume (π r<sup>2</sup>(d<sub>i</sub>-d<sub>w</sub>)): \_\_\_\_\_ ft<sup>3</sup>/gal    Casing radius (r<sub>c</sub>): 2.5 in/ft  
 Casing volume (π r<sup>2</sup>(d<sub>i</sub>-d<sub>w</sub>))(7.48): 21.5 gal    Total volume: \_\_\_\_\_ ft<sup>3</sup>/gal    Total x 3: \_\_\_\_\_ ft<sup>3</sup>/gal

Purge #	Time	Temp (°C)	pH (s.u.)	SpC/Cond (mS/cm, μS/cm)	DO (mg/L, %)	ORP (rmV)	Turb. (NTU)	Water Clarity (poor/mod/good)	Volume Purged (Gallons)	Cumulative Volume Purged (Gallons)	mm Hg
1	1:05	11.7	7.32	1731/1457	22.3/2.14	-155.2	132.4	V. poor	4.5	4.5	629.1
2	1:15	11.3	7.46	1732/1379	28.6/2.89	-177.4	13.97	Mod	4.5	9	629.3
3	1:17	12.8	7.44	1733/1363	31.7/3.22	-177.7	20.43	mod	4.5	13.5	629.7
4	1:24	13.8	7.45	1732/1366	34.2/3.53	-174.5	11.27	good	4.5	18	629.1
5	1:24	13.9	7.44	1734/1362	34.2/3.51	-175.0	5.29	good	4.5	22.5	629.2
6	1:28	13.7	7.47	1736/1363	36.4/3.81	-171.9	5.12	good	4.5	27	629.7
7	1:33	13.7	7.49	1738/1364	36.4/3.62	-166.6	5.34	good	4.5	31.5	629.7
8	1:35	13.8	7.49	1734/1368	35.9/3.65	-166.7	5.87	good	4.5	36	629.1
9	1:39	13.9	7.53	1742/1372	34.9/3.55	-162.0	7.17	good	4.5	40.5	629.0
10	1:42	13.9	2.47	1736/1369	28.1/2.88	-161.2	3.15	good	4.5	45	629.1

#### Field Measurements at Time of Sampling

Parameter	Reading	Time	Measurement (In situ/Container)	Instrument	Comments
Air Temp °C	100°F	1515	truck	Thermometer	
Water Temp °C	11.5	1446	C	pHCon10, YSI	
pH (s.u.)	7.46	1446	C	pHCon10/YSI	
SpC/Conductivity (mS/cm, μS/cm)	1751/1470	1446	C	pHCon10/YSI	
ORP (rmV)	-153.7	1446	C	pH310/YSI	
DO (mg/L, %)	2.16% / 0.25 mg/L	1446	C	DO310/YSI	628.4 mmHg
Turbidity (NTU)	6.53	1440	C	MicroTPI	7.40, 8.28
Discharge (ft <sup>3</sup> /s, L/s, gpm)	6.86 gpm			Flow meter/bucket estimate	
Water Characteristics:	Odor: <u>None</u> /Low/Mod/High	Bubbles: <u>None</u> /Low/Mod/High			
Sediment:	<u>None</u> /Low/Mod/High	Effervescence: <u>None</u> /Low/Mod/High			
VOA Headspace:	<u>None</u> /Low/Mod/High	Other:			
Number and type of filters used:	—	Sampling Time: <u>1400</u>			
GPS Coordinates:	<u>12 S 0749561, 4374389 ± 9 ft</u>		elev.: <u>5438 ft</u>		

## Groundwater Monitoring Field Form

Calibration info on PU 11-7- beaver creek

Instrument Calibration Information						
Parameter	Date <u>6-27</u> Time of Calibration	Temperature Calibration Standard	Calibration Standard Value	Instrument Reading of Standard	Adjusted Reading	Other Information
pH (s. u.)						
pH (s. u.)						
pH (s. u.)						
Sp. Conductivity ( $\mu$ S/cm, mS/cm)						(@ 25 °C) =
Sp. Conductivity ( $\mu$ S/cm, mS/cm)						(@ 25 °C) =
DO (mg/L, %)						
DO (mg/L, %)						
ORP (mV)						
Turbidity (n.t.u)						

Laboratory Information				
Samples collected for laboratory analysis: yes / no				
Constituents to be Analyzed ( $\checkmark$ )				
Inorganics	Inorganics	Organics	Organics	Other
Common ions <input type="checkbox"/>		TPH <input type="checkbox"/>	VOCs <input type="checkbox"/>	TDS <input type="checkbox"/>
Alkalinity <input type="checkbox"/>		BTEX <input type="checkbox"/>	SVOCs <input type="checkbox"/>	TSS <input type="checkbox"/>
Hardness <input type="checkbox"/>		Oil & Grease <input type="checkbox"/>		T. Coli. Bact. <input type="checkbox"/>
Chloride <input type="checkbox"/>		TOC <input type="checkbox"/>		Fecal Coli. Bact. <input type="checkbox"/>
Fluoride <input type="checkbox"/>		DOC <input type="checkbox"/>		Phos/Ni Pest. <input type="checkbox"/>
Phosphorus <input type="checkbox"/>		TIC <input type="checkbox"/>		
Sulfate <input type="checkbox"/>		DRO <input type="checkbox"/>		
Nitrate (as N) <input type="checkbox"/>		GRO <input type="checkbox"/>		
Nitrite (as N) <input type="checkbox"/>		Methane <input type="checkbox"/>		
Nitrogen (total) <input type="checkbox"/>				
Metals (total/dissolved): Sb, Al, As, Ba, Be, B, Cd, Ca, Cr, Cu, Fe, Pb, Li, Mg, Mn, Hg, Mo, Ni, K, Se, Si, Sr, Ag, Na, Tl, U, Va, Zn.				
Ship Date/Time:		Receiving Laboratory:		
Comments:				

## Field Notes:

Discharge: 1: 3.5 @ / 30.4 s gpm		$\pi \cdot (208)^2 (80-59) (7.5)$
		0.136 = 21.5
Weather: SKY- <u>clear</u> / scattered / broken / cloudy / overcast. PRECIP- <u>none</u> / light / mod. / heavy / snow / rain		
WIND- <u>calm</u> / breeze / gusty / moderate / strong / est. wind speed/direction: _____ / _____		
TEMP- cold / cool / mild / warm <u>hot</u> est. air temperature: <u>85-90</u> Comments:		

Water level after sampling 59.03 @ 1449  
58.92 @ 1500



**ATTACHMENT E**

**Laboratory Analytical Summary Report**



## 1306420

### **GC/MS Volatiles:**

The samples were analyzed using GC/MS following the current revision of SOP 525 based on SW-846 Method 8260C. The samples were also analyzed for Gasoline Range Organics (GRO).

All acceptance criteria were met.

### **Dissolved Gasses:**

The sample was prepared and analyzed according to method RSK-175 procedures and the current revision of SOP 449.

All acceptance criteria were met.

### **DRO:**

The sample was analyzed following the current revision of SOP 406 generally based on SW-846 Methods 8000C and 8015D. TEPH is a multicomponent mixture and is quantitated by summing the entire carbon range, rather than individual peaks. The carbon range integrated in this test extends from C10 to C28.

All acceptance criteria were met.

### **BART:**

The Biological Activity Reaction Test was completed with the Iron-Related Bacteria, Sulfate-Reducing Bacteria, and Slime-Forming Bacteria kit manufactured by Hach Company. The analysis was performed following the manufacturer provided instructions. If the target analyte is not detected (absent), then the sample will be reported with "ND" in the result field and a "U" flag. If the target analyte is detected (present), then the sample will be reported with a "1" for a result without a flag.

### **Metals:**

The sample was analyzed following Methods for the Determination of Metals in Environmental Samples – Supplement 1 procedures. Analysis by ICPMS followed method 200.8 and the current revision of SOP 827.

The sample was to be analyzed for dissolved metals. The sample was filtered through a 0.45 micron filter and preserved with nitric acid to a pH less than two prior to analysis.

All acceptance criteria were met.



**Inorganics:**

The sample was analyzed following MCAWW, EMSL, Standard Method procedures for the current revisions of the following SOPs and methods:

<u>Analyte</u>	<u>Method</u>	<u>SOP #</u>
Alkalinity	SM2320B	1106
Bicarbonate	SM2320B	1106
Carbonate	SM2320B	1106
pH	SM4500-H <sup>+</sup> B	1126
Total phosphorus	365.2	1119
Specific conductance	SM2510B	1128
TDS	SM2540C	1101
Bromide	300.0 Revision 2.1	1113
Chloride	300.0 Revision 2.1	1113
Fluoride	300.0 Revision 2.1	1113
Nitrate as N	300.0 Revision 2.1	1113
Nitrite as N	300.0 Revision 2.1	1113
Sulfate	300.0 Revision 2.1	1113

The sample was prepared and analyzed within the established hold time for each analysis with the exception of nitrate as N and nitrite as N. Due to a power outage that occurred on the evening of 06/28/13 that disrupted laboratory operations the sample was analyzed on 06/29/13, out of hold. (See NCR #13940).

All remaining acceptance criteria were met.

# ALS Environmental -- FC

## Sample Number(s) Cross-Reference Table

---

**OrderNum:** 1306420

**Client Name:** Western Water and Land, Inc.

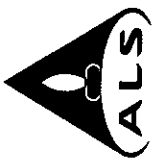
**Client Project Name:** WPX Baseline Water Quality

**Client Project Number:** GM 23-34

**Client PO Number:**

---

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
GM 23-34-44425	1306420-1		WATER	27-Jun-13	14:00
Trip Blank	1306420-2		WATER	27-Jun-13	



**ALS Laboratory Group**

225 Commerce Drive, Fort Collins, Colorado 80524  
 TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1622

**Chain-of-Custody**

Form 20278

PROJECT NAME WPX EWQ	SAMPLER Shelby Goodwin	TURNAROUND DATE 6-27-13	WORKORDER # 1306420
FACILITY NAME Western Water & Land	PROJECT NO. 30000.01	DISPOSAL Standard	PAGE 1 of 1
FACILITY ID (API)	EDD FORMAT	By Lab or	Return to Client
COMPANY NAME Western Water & Land	PURCHASE ORDER	DISPOSAL	
SEND REPORT TO Bruce Smith	BILL TO COMPANY WPX Energy	DISPOSAL	
ADDRESS 743 Horizon Ct, Suite 330	INVOICE ATTN TO Brandon Parforn	DISPOSAL	
CITY/STATE/ZIP Grand Jct., CO 81504	ADDRESS 1058 County Rd. 215	DISPOSAL	
PHONE 970-242-0170	CITY/STATE/ZIP Parachute, CO 81435	DISPOSAL	
FAX	PHONE 970-243-2792	DISPOSAL	
E-MAIL bsmith@westernwater.com	FAX	DISPOSAL	
	E-MAIL andland.com	DISPOSAL	
Lab ID	Matrix	DISPOSAL	
①	W	DISPOSAL	
② TB		DISPOSAL	

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

For metals or anions, please detail analytes below.

Comments:  
 dissolved metals need to be laboratory filtered

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035

RELINQUISHED BY J. Goodwin	SIGNATURE	PRINTED NAME Shelby Goodwin	DATE 6-27-13	TIME 1700
RECEIVED BY C. Humble			DATE 6-28-13	TIME 0920
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				



1306420



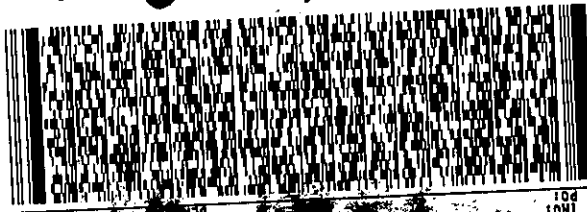
9622 0417 3 (000 733 7652) 4 00 7957 9379 8736

80524

MPS# 7957 9379 8736  
2 of 2  
Mat# 7957 9379 8725

Handwritten numbers: 3.8, 11, 2

J13111007120126



TO amy wolf  
ALS ENVIRONMENTAL  
225 COMMERCE DR  
FORT COLLINS CO 80524  
(US)

922928519622715318012977195AR-D

SHIP DATE: 02 JUN 13  
ACTWGT: 43.6 LB  
CAD: 9622/OFFC1400  
DIMMED: 25 X 13 X 13 IN  
BILL 3rd PARTY

FROM: (920) 242-0170  
WESTERN WATER & LAND INC  
743 HORIZON CT STE 390  
GRAND JUNCTION CO 81506  
US

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: Western Water and Land, Inc.  
 Project: GM 23-34 WPX Baseline Water Quality  
 Sample ID: GM 23-34-44425  
 Legal Location:  
 Collection Date: 6/27/2013 14:00

Date: 02-Aug-13  
 Work Order: 1306420  
 Lab ID: 1306420-1  
 Matrix: WATER  
 Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>ALKALINITY AS CALCIUM CARBONATE</b>			<b>SM2320B</b>		Prep Date: 7/2/2013	PrepBy: AJD
BICARBONATE AS CaCO3	460		20	MG/L	1	7/2/2013
CARBONATE AS CaCO3	ND		20	MG/L	1	7/2/2013
TOTAL ALKALINITY AS CaCO3	460		20	MG/L	1	7/2/2013
<b>BIOLOGICAL ACTIVITY REACTION TEST</b>			<b>BART</b>		Prep Date: 7/2/2013	PrepBy: BAS
IRON RELATED BACTERIA	ND			NU	1	7/10/2013
SLIME FORMING BACTERIA	ND			NU	1	7/10/2013
SULFATE REDUCING BACTERIA	ND			NU	1	7/10/2013
<b>DIESEL RANGE ORGANICS</b>			<b>SW8015M</b>		Prep Date: 7/2/2013	PrepBy: JAC
Diesel Range Organics	ND		0.5	MG/L	1	7/3/2013 23:10
Surr: O-TERPHENYL	75		51-97	%REC	1	7/3/2013 23:10
<b>DISSOLVED GASSES</b>			<b>RSK175</b>		Prep Date: 7/1/2013	PrepBy: JFN
METHANE	ND		1	UG/L	1	7/1/2013 12:48
ETHANE	ND		2	UG/L	1	7/1/2013 12:48
PROPANE	ND		1	UG/L	1	7/1/2013 12:48
<b>GC/MS VOLATILES</b>			<b>SW8260_25</b>		Prep Date: 7/2/2013	PrepBy: SDW
BENZENE	ND		1	UG/L	1	7/2/2013 18:09
TOLUENE	ND		1	UG/L	1	7/2/2013 18:09
ETHYLBENZENE	ND		1	UG/L	1	7/2/2013 18:09
M+P-XYLENE	ND		1	UG/L	1	7/2/2013 18:09
O-XYLENE	ND		1	UG/L	1	7/2/2013 18:09
GASOLINE RANGE ORGANICS	ND		100	UG/L	1	7/2/2013 18:09
Surr: DIBROMOFLUOROMETHANE	103		84-118	%REC	1	7/2/2013 18:09
Surr: TOLUENE-D8	101		85-115	%REC	1	7/2/2013 18:09
Surr: 4-BROMOFLUOROBENZENE	97		85-115	%REC	1	7/2/2013 18:09
<b>ION CHROMATOGRAPHY</b>			<b>EPA300.0</b>		Prep Date: 6/28/2013	PrepBy: AJD
BROMIDE	ND		0.2	MG/L	1	6/30/2013 04:42
CHLORIDE	25		2	MG/L	10	7/3/2013 17:44
FLUORIDE	1		0.1	MG/L	1	6/30/2013 04:42
NITRATE AS N	ND		0.2	MG/L	1	6/30/2013 04:42
NITRITE AS N	ND		0.1	MG/L	1	6/30/2013 04:42
SULFATE	530		20	MG/L	20	6/30/2013 05:11
<b>METALS BY 200.8</b>			<b>EPA200.8</b>		Prep Date: 7/9/2013	PrepBy: BAS
BORON	100		50	UG/L	10	7/10/2013 12:22
BARIUM	17		1	UG/L	10	7/10/2013 12:22
CALCIUM	120000		1000	UG/L	10	7/10/2013 12:22
IRON	2000		100	UG/L	10	7/10/2013 12:22
POTASSIUM	4100		1000	UG/L	10	7/10/2013 12:22
MAGNESIUM	72000		100	UG/L	10	7/10/2013 12:22
MANGANESE	230		2	UG/L	10	7/10/2013 12:22
SODIUM	180000		1000	UG/L	10	7/10/2013 12:22

**Client:** Western Water and Land, Inc.  
**Project:** GM 23-34 WPX Baseline Water Quality  
**Sample ID:** GM 23-34-44425  
**Legal Location:**  
**Collection Date:** 6/27/2013 14:00

**Date:** 02-Aug-13  
**Work Order:** 1306420  
**Lab ID:** 1306420-1  
**Matrix:** WATER  
**Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
SELENIUM	ND		1	UG/L	10	7/10/2013 12:22
STRONTIUM	1800		1	UG/L	10	7/10/2013 12:22
<b>PH</b>			<b>SM4500-H</b>		Prep Date: <b>7/1/2013</b>	PrepBy: <b>AJD</b>
PH	7.49		0.1	pH	1	7/1/2013
<b>SPECIFIC CONDUCTANCE IN WATER</b>			<b>SM2510B</b>		Prep Date: <b>7/1/2013</b>	PrepBy: <b>AJD</b>
SPECIFIC CONDUCTIVITY	1742		1	umhos/cm	1	7/1/2013
<b>TOTAL DISSOLVED SOLIDS</b>			<b>SM2540C</b>		Prep Date: <b>7/2/2013</b>	PrepBy: <b>AJD</b>
TOTAL DISSOLVED SOLIDS	1200		40	MG/L	1	7/3/2013
<b>TOTAL PHOSPHORUS AS P</b>			<b>EPA365.2</b>		Prep Date: <b>7/5/2013</b>	PrepBy: <b>TWK</b>
TOTAL PHOSPHORUS	ND		0.05	MG/L	1	7/5/2013

**Client:** Western Water and Land, Inc.  
**Project:** GM 23-34 WPX Baseline Water Quality  
**Sample ID:** Trip Blank  
**Legal Location:**  
**Collection Date:** 6/27/2013

**Date:** 02-Aug-13  
**Work Order:** 1306420  
**Lab ID:** 1306420-2  
**Matrix:** WATER  
**Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>GC/MS VOLATILES</b>			<b>SW8260_25</b>		Prep Date: <b>7/2/2013</b>	PrepBy: <b>SDW</b>
BENZENE	ND		1	UG/L	1	7/2/2013 18:32
TOLUENE	ND		1	UG/L	1	7/2/2013 18:32
ETHYLBENZENE	ND		1	UG/L	1	7/2/2013 18:32
M+P-XYLENE	ND		1	UG/L	1	7/2/2013 18:32
O-XYLENE	ND		1	UG/L	1	7/2/2013 18:32
<b>GASOLINE RANGE ORGANICS</b>	<b>32</b>	J	<b>100</b>	<b>UG/L</b>	1	7/2/2013 18:32
Surr: DIBROMOFLUOROMETHANE	103		84-118	%REC	1	7/2/2013 18:32
Surr: TOLUENE-D8	100		85-115	%REC	1	7/2/2013 18:32
Surr: 4-BROMOFLUOROBENZENE	98		85-115	%REC	1	7/2/2013 18:32

**Client:** Western Water and Land, Inc.  
**Project:** GM 23-34 WPX Baseline Water Quality  
**Sample ID:** Trip Blank  
**Legal Location:**  
**Collection Date:** 6/27/2013

**Date:** 02-Aug-13  
**Work Order:** 1306420  
**Lab ID:** 1306420-2  
**Matrix:** WATER  
**Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
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**Explanation of Qualifiers**

**Radiochemistry:**

U or ND - Result is less than the sample specific MDC.	M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.	L - LCS Recovery below lower control limit.
Y2 - Chemical Yield outside default limits.	H - LCS Recovery above upper control limit.
W - DER is greater than Warning Limit of 1.42	P - LCS, Matrix Spike Recovery within control limits.
* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.	N - Matrix Spike Recovery outside control limits
# - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.	NC - Not Calculated for duplicate results less than 5 times MDC
G - Sample density differs by more than 15% of LCS density.	B - Analyte concentration greater than MDC.
D - DER is greater than Control Limit	B3 - Analyte concentration greater than MDC but less than Requested MDC.
M - Requested MDC not met.	
LT - Result is less than requested MDC but greater than achieved MDC.	

**Inorganics:**

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).  
 U or ND - Indicates that the compound was analyzed for but not detected.  
 E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.  
 M - Duplicate injection precision was not met.  
 N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.  
 Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.  
 \* - Duplicate analysis (relative percent difference) not within control limits.

**Organics:**

U or ND - Indicates that the compound was analyzed for but not detected.  
 B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.  
 E - Analyte concentration exceeds the upper level of the calibration range.  
 J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).  
 A - A tentatively identified compound is a suspected aldol-condensation product.  
 X - The analyte was diluted below an accurate quantitation level.  
 \* - The spike recovery is equal to or outside the control criteria used.  
 + - The relative percent difference (RPD) equals or exceeds the control criteria.

**Diesel Range Organics:**

**Client:** Western Water and Land, Inc.  
**Project:** GM 23-34 WPX Baseline Water Quality  
**Sample ID:** Trip Blank  
**Legal Location:**  
**Collection Date:** 6/27/2013

**Date:** 02-Aug-13  
**Work Order:** 1306420  
**Lab ID:** 1306420-2  
**Matrix:** WATER  
**Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<p>G - A pattern resembling gasoline was detected in this sample.                      D - A pattern resembling diesel was detected in this sample.                      M - A pattern resembling motor oil was detected in this sample.                      C - A pattern resembling crude oil was detected in this sample.                      4 - A pattern resembling JP-4 was detected in this sample.                      5 - A pattern resembling JP-5 was detected in this sample.                      H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.                      L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.                      Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:                      - gasoline                      - JP-8                      - diesel                      - mineral spirits                      - motor oil                      - Stoddard solvent                      - bunker C</p>						

ALS Environmental -- FC

Date: 8/2/2013 8:02:5

Client: Western Water and Land, Inc.

QC BATCH REPORT

Work Order: 1306420

Project: GM 23-34 WPX Baseline Water Quality

Batch ID: HC130701-9-1

Instrument ID MEE-1

Method: RSK175

**LCS** Sample ID: **HC130701-9** Units: **UG/L** Analysis Date: **7/1/2013 12:00**  
 Client ID: Run ID: **HC130701-9A** Prep Date: **7/1/2013** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
METHANE	129	1	142		91	80-120			25	
ETHANE	247	2	267		93	80-120			25	
PROPANE	356	1	391		91	80-120			25	

**LCSD** Sample ID: **HC130701-9** Units: **UG/L** Analysis Date: **7/1/2013 12:54**  
 Client ID: Run ID: **HC130701-9A** Prep Date: **7/1/2013** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
METHANE	143	1	142		101	80-120	129	10	25	
ETHANE	272	2	267		102	80-120	247	10	25	
PROPANE	392	1	391		100	80-120	356	9	25	

**MB** Sample ID: **HC130701-9** Units: **UG/L** Analysis Date: **7/1/2013 12:04**  
 Client ID: Run ID: **HC130701-9A** Prep Date: **7/1/2013** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
METHANE	ND	1								
ETHANE	ND	2								
PROPANE	ND	1								

The following samples were analyzed in this batch:

**Client:** Western Water and Land, Inc.  
**Work Order:** 1306420  
**Project:** GM 23-34 WPX Baseline Water Quality

# QC BATCH REPORT

Batch ID: **EX130702-1-1**      Instrument ID **FUELS-1**      Method: **SW8015M**

LCS		Sample ID: <b>EX130702-1</b>			Units: <b>MG/L</b>			Analysis Date: <b>7/3/2013 20:35</b>		
Client ID:		Run ID: <b>HCD130703-3A</b>			Prep Date: <b>7/2/2013</b>			DF: <b>1</b>		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
Diesel Range Organics	10.4	0.5	10		104	36-150			20	
Surr: O-TERPHENYL	1.14		1.25		91	51-97				

LCSD		Sample ID: <b>EX130702-1</b>			Units: <b>MG/L</b>			Analysis Date: <b>7/3/2013 21:06</b>		
Client ID:		Run ID: <b>HCD130703-3A</b>			Prep Date: <b>7/2/2013</b>			DF: <b>1</b>		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
Diesel Range Organics	10.5	0.5	10		105	36-150	10.4	1	20	
Surr: O-TERPHENYL	1.17		1.25		94	51-97		2		

MB		Sample ID: <b>EX130702-1</b>			Units: <b>MG/L</b>			Analysis Date: <b>7/3/2013 20:04</b>		
Client ID:		Run ID: <b>HCD130703-3A</b>			Prep Date: <b>7/2/2013</b>			DF: <b>1</b>		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
Diesel Range Organics	ND	0.5								
Surr: O-TERPHENYL	0.898		1.25		72	51-97				

The following samples were analyzed in this batch: 1306420-1

Client: Western Water and Land, Inc.  
 Work Order: 1306420  
 Project: GM 23-34 WPX Baseline Water Quality

# QC BATCH REPORT

Batch ID: **IP130709-1-2** Instrument ID **ICPMS2** Method: **EPA200.8**

LCS		Sample ID: <b>FM130708-1</b>			Units: <b>UG/L</b>			Analysis Date: <b>7/10/2013 12:30</b>			
Client ID:		Run ID: <b>IM130710-10A2</b>			Prep Date: <b>7/9/2013</b>			DF: <b>10</b>			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual	
BARIUM	95.9	1	100		96	85-115			20		
BORON	857	50	1000		86	85-115			20		
CALCIUM	9140	1000	10000		91	85-115			20		
IRON	5080	100	5000		102	85-115			20		
MAGNESIUM	9180	100	10000		92	85-115			20		
MANGANESE	192	2	200		96	85-115			20		
POTASSIUM	5340	1000	5000		107	85-115			20		
SELENIUM	99.5	1	100		99	85-115			20		
SODIUM	10200	1000	10000		102	85-115			20		
STRONTIUM	93.9	1	100		94	85-115			20		

MB		Sample ID: <b>F130708-1</b>			Units: <b>UG/L</b>			Analysis Date: <b>7/10/2013 12:14</b>			
Client ID:		Run ID: <b>IM130710-10A2</b>			Prep Date: <b>7/9/2013</b>			DF: <b>10</b>			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual	
BARIUM	ND	1									
BORON	ND	50									
CALCIUM	ND	1000									
IRON	ND	100									
MAGNESIUM	ND	100									
MANGANESE	ND	2									
POTASSIUM	ND	1000									
SELENIUM	ND	1									
SODIUM	ND	1000									
STRONTIUM	ND	1									

The following samples were analyzed in this batch:

Client: Western Water and Land, Inc.  
 Work Order: 1306420  
 Project: GM 23-34 WPX Baseline Water Quality

# QC BATCH REPORT

Batch ID: VL130702-4-1 Instrument ID HPV1 Method: SW8260\_25

LCS		Sample ID: VL130702-4			Units: UG/L			Analysis Date: 7/2/2013 12:43			
Client ID:		Run ID: VL130702-4A			Prep Date: 7/2/2013			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual	
BENZENE	10.8	1	10		108	83-117			20		
TOLUENE	10.7	1	10		107	82-113			20		
ETHYLBENZENE	10.7	1	10		107	81-113			20		
M+P-XYLENE	22.5	1	20		113	82-115			20		
O-XYLENE	11.1	1	10		111	81-115			20		
GASOLINE RANGE ORGANICS	504	100	500		100.72	80-120			20		
Surr: DIBROMOFLUOROMETHA	25.5		25		102	84-118					
Surr: TOLUENE-D8	25		25		100	85-115					
Surr: 4-BROMOFLUOROBENZE	25.1		25		101	85-115					

LCSD		Sample ID: VL130702-4			Units: UG/L			Analysis Date: 7/2/2013 13:06			
Client ID:		Run ID: VL130702-4A			Prep Date: 7/2/2013			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual	
BENZENE	10.4	1	10		104	83-117	10.8	4	20		
TOLUENE	10.5	1	10		105	82-113	10.7	1	20		
ETHYLBENZENE	10.4	1	10		104	81-113	10.7	3	20		
M+P-XYLENE	21.5	1	20		108	82-115	22.5	5	20		
O-XYLENE	10.5	1	10		105	81-115	11.1	6	20		
GASOLINE RANGE ORGANICS	499	100	500		99.956	80-120	504		20		
Surr: DIBROMOFLUOROMETHA	25.7		25		103	84-118		1			
Surr: TOLUENE-D8	25		25		100	85-115		0			
Surr: 4-BROMOFLUOROBENZE	25.5		25		102	85-115		1			

MB		Sample ID: VL130702-4			Units: UG/L			Analysis Date: 7/2/2013 13:30			
Client ID:		Run ID: VL130702-4A			Prep Date: 7/2/2013			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual	
BENZENE	ND	1									
TOLUENE	ND	1									
ETHYLBENZENE	ND	1									
M+P-XYLENE	ND	1									
O-XYLENE	ND	1									
GASOLINE RANGE ORGANICS	ND	100									
Surr: DIBROMOFLUOROMETHA	25.3		25		101	84-118					
Surr: TOLUENE-D8	25.4		25		101	85-115					
Surr: 4-BROMOFLUOROBENZE	24.2		25		97	85-115					

The following samples were analyzed in this batch: 1306420-1 1306420-2

**Client:** Western Water and Land, Inc.  
**Work Order:** 1306420  
**Project:** GM 23-34 WPX Baseline Water Quality

# QC BATCH REPORT

Batch ID: **ak130702-1-1**      Instrument ID **NONE**      Method: **SM2320B**

LCS		Sample ID: <b>ak130702-1</b>			Units: <b>MG/L</b>			Analysis Date: <b>7/2/2013</b>		
Client ID:		Run ID: <b>ak130702-1a</b>			Prep Date: <b>7/2/2013</b>			DF: <b>1</b>		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL ALKALINITY AS CaCO3	98.7	5	100		99	85-115			15	

MB		Sample ID: <b>ak130702-1</b>			Units: <b>MG/L</b>			Analysis Date: <b>7/2/2013</b>		
Client ID:		Run ID: <b>ak130702-1a</b>			Prep Date: <b>7/2/2013</b>			DF: <b>1</b>		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
BICARBONATE AS CaCO3	ND	5								
CARBONATE AS CaCO3	ND	5								
TOTAL ALKALINITY AS CaCO3	ND	5								

The following samples were analyzed in this batch:

Client: Western Water and Land, Inc.  
 Work Order: 1306420  
 Project: GM 23-34 WPX Baseline Water Quality

# QC BATCH REPORT

Batch ID: **IC130628-1-1** Instrument ID **IC** Method: **EPA300.0**

LCS		Sample ID: <b>IC130628-1</b>			Units: <b>MG/L</b>			Analysis Date: <b>6/28/2013 14:29</b>		
Client ID:		Run ID: <b>IC130628-1A1</b>			Prep Date: <b>6/28/2013</b>			DF: <b>1</b>		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
FLUORIDE	2.03	0.1	2		102	90-110			15	
CHLORIDE	5.21	0.2	5		104	90-110			15	
NITRITE AS N	2.03	0.1	2		102	90-110			15	
BROMIDE	5.43	0.2	5		109	90-110			15	
NITRATE AS N	5.31	0.2	5		106	90-110			15	
SULFATE	20	1	20		100	90-110			15	

MB		Sample ID: <b>IC130628-1</b>			Units: <b>MG/L</b>			Analysis Date: <b>6/28/2013 14:43</b>		
Client ID:		Run ID: <b>IC130628-1A1</b>			Prep Date: <b>6/28/2013</b>			DF: <b>1</b>		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
FLUORIDE	ND	0.1								
CHLORIDE	ND	0.2								
NITRITE AS N	ND	0.1								
BROMIDE	ND	0.2								
NITRATE AS N	ND	0.2								
SULFATE	ND	1								

The following samples were analyzed in this batch:

**Client:** Western Water and Land, Inc.  
**Work Order:** 1306420  
**Project:** GM 23-34 WPX Baseline Water Quality

# QC BATCH REPORT

Batch ID: **TD130702-1-1**      Instrument ID **Balance**      Method: **SM2540C**

LCS		Sample ID: <b>TD130702-1</b>			Units: <b>MG/L</b>			Analysis Date: <b>7/3/2013</b>		
Client ID:		Run ID: <b>TD130703-1A</b>			Prep Date: <b>7/2/2013</b>			DF: <b>1</b>		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	390	20	400		98	85-115			5	

MB		Sample ID: <b>TD130702-1</b>			Units: <b>MG/L</b>			Analysis Date: <b>7/3/2013</b>		
Client ID:		Run ID: <b>TD130703-1A</b>			Prep Date: <b>7/2/2013</b>			DF: <b>1</b>		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	ND	20								

The following samples were analyzed in this batch:

**Client:** Western Water and Land, Inc.  
**Work Order:** 1306420  
**Project:** GM 23-34 WPX Baseline Water Quality

# QC BATCH REPORT

Batch ID: **TP130705-1-1**      Instrument ID **Spec**      Method: **EPA365.2**

LCS		Sample ID: <b>TP130705-1</b>			Units: <b>MG/L</b>			Analysis Date: <b>7/5/2013</b>		
Client ID:		Run ID: <b>TP130705-1A</b>			Prep Date: <b>7/5/2013</b>			DF: <b>1</b>		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL PHOSPHORUS	0.523	0.05	0.5		105	80-120			20	

MB		Sample ID: <b>TP130705-1</b>			Units: <b>MG/L</b>			Analysis Date: <b>7/5/2013</b>		
Client ID:		Run ID: <b>TP130705-1A</b>			Prep Date: <b>7/5/2013</b>			DF: <b>1</b>		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL PHOSPHORUS	ND	0.05								

The following samples were analyzed in this batch:



## CONTROLLED NON-CONFORMANCE REPORT

### Non-Conformance

**Initiated By:** Joel F. Nolte on 7/1/2013

**Event Type:** Method Requirements Not Met -- HTV

**Event Explanation:** Due to a power outage that occurred after work hours on the evening of Friday 6/28/13, and disrupted all laboratory operations, the following work orders were analyzed on 6/29/13 (out of hold time) for method EPA300:

1306400, 401, 403, 419, and 420 (out of HT for NO2 & NO3).

1306410 and 411 (out of HT for NO3).

All other anions in these work orders were analyzed within hold time.(jfn)

**Action To**

**Prevent Recurrence:** Not Applicable

### Corrective Action

**Corrective Action:** Document in Narrative

**Department Manager Approval:** Roy French

**Approval Date:** 7/3/2013

**Corrective Action Comments:**

#### Workorders Affected

Workorder -- Procedure		Approved By	Approval Date
1306400 -- EPA300.0	Brian Dodek was contacted on 7/2/2013	Amy R. Wolf	7/2/2013
1306419 -- EPA300.0 1306420 -- EPA300.0	Bruce Smith was contacted on 7/2/2013	Amy R. Wolf	7/2/2013
1306401 -- EPA300.0 1306403 -- EPA300.0	Rochelle Carlisle was contacted on 7/2/2013	Amy R. Wolf	7/2/2013
1306410 -- EPA300.0 1306411 -- EPA300.0	Tracy Breinholt was contacted on 7/1/2013	Julie Ellingson	7/2/2013

### There Are No Associated Batches



## **CONTROLLED** NON-CONFORMANCE REPORT

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### **NCR Approval**

**Project Manager Approval:**

JME on 7/2/2013

**Department Manager Approval:** Roy French on 7/3/2013

**QA Manager Approval:** Bob DiRienzo on 7/14/2013