



March 9, 2016

Ms. Karolina Blaney
WPX Environmental Specialist
WPX Energy Rocky Mountain LLC
1058 County Road 215
Parachute, Colorado 81635

RE: RU 11-7 Completions Pit Annual Sampling Event Results Report, December 2015 and January 2016 Event

Dear Ms. Blaney,

Western Water & Land, Inc. (WWL) has completed the annual post-construction water quality sampling for the WPX Energy Rocky Mountain LLC (WPX) RU 11-7 Completions Pit in accordance with the Colorado Oil and Gas Conservation Commission (COGCC) Condition of Approval 9 (COA 9) and Form 15. The RU 11-7 Completions Pit is located in NW¼, NW¼, Section 7, Township 7 South, Range 93 West, 6th PM. The initial baseline sampling event was conducted in June, 2013 (see RU 11-7 Completions Pit Baseline Results Report, June 2013 Event). The first subsequent (post-construction) sampling event was conducted in March 2014 (see RU 11-7 Completions Pit First Subsequent Results Report, March 2014 Event). The second subsequent sampling event was conducted in December 2014 and March 2015 (see RU 11-7 Completions Pit Second Subsequent Results Report, December 2014 and March 2015 Event).

In accordance with COA 9, the baseline water quality evaluation considered all water sources (domestic wells or springs) within a 1.0-mile radius of the referenced completions pit (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 two or less, all of the sources were included in the list of preferred sources. If more than two sources were potentially available, the sources were prioritized based on WWL's hydrologic expertise and in accordance with COA 9. A complete description of the water source evaluation process and results are provided in the water source evaluation report (RU 11-7 Beaver Creek Completions Pit Baseline Water Quality Evaluation, May 1, 2013).

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

SAMPLING LOCATIONS AND FIELD ACTIVITIES

As described in the RU 11-7 Completions Pit Water Source Evaluation, three potential sampling locations were identified for field sampling of water quality consistent with requirements of COA 9. Two wells and one spring were identified as the preferred sampling locations:

- Savage Beaver Creek Well 2 (potentially related to Water Well permit 77345)
- Water Well Permit No. 31355 (unknown status, no completion report)
- Yellow Jacket Spring

WWL personnel conducted thorough field reconnaissance to locate “Savage Beaver Creek Well 2”, but did not locate the well. State records indicate that the well was dry when drilled and it may not have been completed. Water Well Permit No. 31355 was determined to be unsuitable for the baseline water quality program because of its permit status. No substitute preferred groundwater sources were identified in the evaluation and, therefore, Beaver Creek surface water was sampled.

In accordance with Form 15, surface water samples (one upgradient and one downgradient from the RU 11-7 completions pit) from the unnamed intermittent stream west of the location (if water is present), and from Beaver Creek are to be collected. The unnamed intermittent stream west of the RU 11-7 Completions Pit was dry both upgradient and downgradient of the completions pit; no samples from the stream were collected. One upgradient and one downgradient sample of Beaver Creek were collected.

Three samples were collected for the RU 11-7 Completions Pit as shown in the table below.

Sampling Date	Well and/or Water Right Identification or Permit No.	Sample Identification	COGCC Facility ID
12/9/2015	Beaver Creek	Beaver Cr 2	753174
12/9/2015	Yellow Jacket Spring	Yellow Jacket Spg	752709
12/9/2015	Beaver Creek	Beaver Cr Up	754591

Sample Beaver Cr 2 is located on U.S. Bureau of Land Management’s (BLM) property adjacent to County Road 317 approximately 1,660 feet downstream from the initial baseline station (RU 11-7- Beaver Creek), and approximately 5,340 feet downgradient of the RU 11-7 Completions Pit. The sampling location was moved downstream for the first, second, and third subsequent sampling events in order to incorporate a tributary that drains the catchment that contains the RU 11-7 Completions Pit. Sample Beaver Cr 2 was collected on December 9, 2015. Sample for total coliform was recollected on January 27, 2016. No landowners or WPX representatives were present for the sampling event.

Sample Yellow Jacket Spring is located on BLM property. Yellow Jacket Spring water is conveyed an unknown distance downhill through two, one and one-half inch polyethylene pipes. One pipe is plumbed into stock watering tanks and the other is stubbed out of the ground and drains into a small watering trough; the spring water sample was collected directly from the stubbed out pipe draining into the watering trough. VOAs for dissolved gas analysis were top-filled and preserved with hydrochloric acid. Sample Yellow Jacket Spg was collected on December 9, 2015. A sample for total coliform and BART analysis was recollected on January 27, 2016. No landowners or WPX representatives were present for the sampling event.

Sample Beaver Cr Up is located on Youberg Beaver Creek Ranch's property. The Beaver Cr Up sample location is located adjacent to County Road 317 approximately 2,550 feet upgradient of the RU 11-7 Completions Pit. Sample Beaver Cr Up was collected on December 9, 2015. No landowners or WPX representatives were present for the sampling event.

See Figure 1 for the sampled locations. 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). Sampling Method 1 – submerged inverted bottles for surface water sampling procedures, described in the WPX SAP, was used to collect sample Beaver Cr 2, and Sampling Method 2 – top-filling for surface water sampling was used to collect Yellow Jacket Spg and Beaver Cr Up.

The samples were relinquished to the analytical laboratory's (ALS Environmental [ALS], Fort Collins, Colorado) courier in Parachute, Colorado, who packs them in coolers with ice for preservation and ships them to the analytical laboratory by way of FedEx. Yellow Jacket Spg and Beaver Cr 2 total coliform samples were relinquished to the Mesa County Health Department's Regional Laboratory for analysis.

QUALITY CONTROL SUMMARY

WWL conducted a Tier 1 data validation quality control evaluation of the received analytical laboratory data report. Attachment C presents detailed information on the quality control evaluation for field sampling and laboratory analysis associated with the collected samples.

ALS reported that all analytes were within control criteria for matrix spikes (MS), matrix spike duplicates (MSD), duplicate relative percent difference (RPD), and laboratory control samples (LCS). ALS did not assign qualifiers to the analytical results based on the quality control summary.

ALS assigned analytical results that were undetected with a "U" qualifier and "J" qualifier to results that were detected above the method detection limit but below the reporting limit to indicate the result value is estimated. WWL assigned an "H" qualifier to results that exceeded analytical holding times to indicate the result value is estimated and an "E" qualifier to biological results that were collected separately from the initial sample; these results are considered estimated. See Attachment C and Attachment D for individual parameters that were qualified.

ANALYTICAL RESULTS

Laboratory analysis was performed by ALS, in Fort Collins, Colorado and by the Mesa County Health Department's Regional Laboratory, in Grand Junction, Colorado in accordance with the analytical schedule described in COA 9 and Form 15 with some deviations in analytical methods. The analytical methods used are considered valid and provide quality results. The analytical results are summarized in Attachment D; the data are qualified as indicated. The full laboratory analytical report is presented in Attachment E.

No analyzed hydrocarbon constituents (diesel range organics, gasoline range organics, benzene, toluene, ethylbenzene, and xylenes) were detected in the sampled water sources for the annual sampling event conducted in December 2015 with the exception of toluene associated with Yellow Jacket Spring (detected above the MDL but below the reporting limit at 0.55 ug/L). Magnesium, potassium, chloride, and fluoride concentrations associated with sample Beaver Cr 2 exhibited variability between the initial (June 2013) and third subsequent event (approximately 2, 2, 3, and 3

times different, respectively); concentration differences may be related to the large difference in discharge during the sampling events. Methane, iron and chloride concentrations associated with sample Yellow Jacket Spg exhibited variability between the initial (June 2013) and third subsequent event (approximately 93, 5.5 and 6 times different, respectively). There were no other significant differences in common ion and metal ion concentrations between the initial, first subsequent, second subsequent, and third subsequent sampling event results.

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

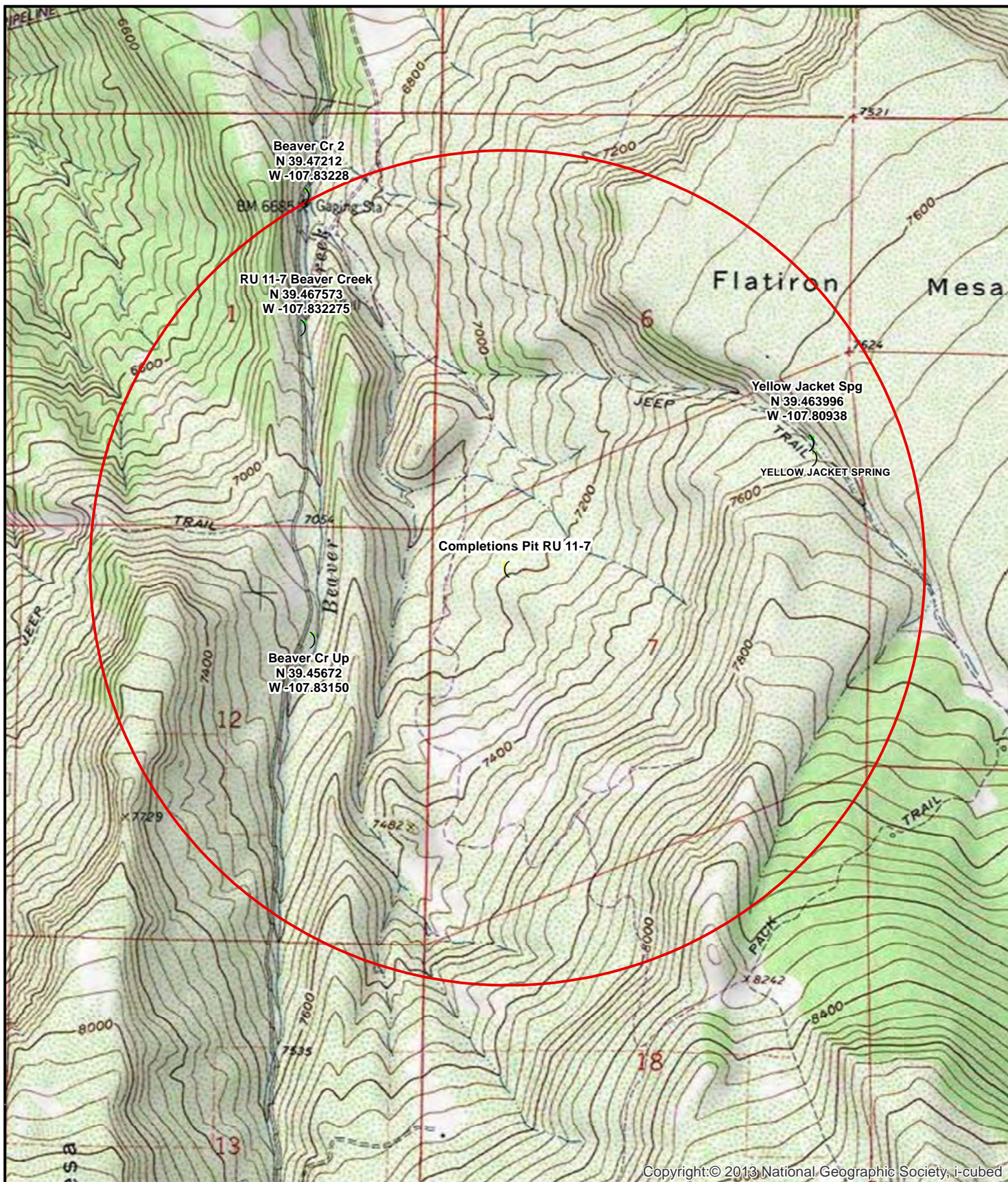
Sincerely,

A handwritten signature in black ink, appearing to read "Bruce D. Smith". The signature is fluid and cursive, with the first name "Bruce" being more legible than the last name "Smith".

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

Attachments

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



Legend

- Sample Location(s)
- Completions Pit RU 11-7
- Decree
- 1-Mile Radius Evaluation Area
- Constructed well

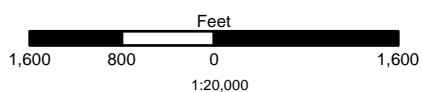


Figure 1: RU 11-7 Completions Pit Sampling Locations
COGCC COA 9 and Form 15 Annual Sampling
NW1/4, NW1/4, S7, T7S, R93W, 6PM

WPX Energy Rocky Mtn. LLC
 Garfield County, Colorado

Basemap Source: Bing Maps and Esri ArcGIS Online



Western Water & Land, Inc.
 Applications in Earth Science

ATTACHMENT A

Photographs



Photo 1. Downgradient Beaver Creek Sampling Location (Beaver Cr 2)



Photo 2. Yellow Jacket Spring Sampling Location (Yellow Jacket Spg)



Photo 3. Upgradient Beaver Creek Sampling Location (Beaver Cr Up)

ATTACHMENT B

Field Monitoring Forms

WPX BWQ Surface Water Monitoring Field Form

Project Information			
Project:	BWD: RW 11-7	Sample Purpose:	COA 9 Annual
Site Name (Well Pad):	RW 11-7	Site API:	045-06818
Station Name:	Savage Beaver Creek 2	Sample Date:	12-9-15
COGCC Facility ID:	753974	Start Time:	1100
Field Sample ID:	Beaver Cr. 2	End Time:	1215
Landowner Name:	Jan Savage	Sample Time:	1115
Landowner Address:	PO Box 1926, Rifle, CO 81650	Sample Team:	NWS, SLK
Water Right/Well Owner:	NA	Observer:	SLK
Water Right/Well Permit:	NA	Lead Signature/Date:	J. App 12-10-15

Station Information			
Station Description: Weak riffle section ~100 ft off Beaver Creek RW			
Approximate Distance to Well Pad: 5340 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:			
Sampling Location Width: 6.5 ft		Sampling Location Depth: 0.25 ft	
GPS Location:	Zone	x -107.83228	y 39.47212 z 6416 ft

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

Field Measurements							
Parameter	Units	Reading	Time	Flag Code	Instrument	In-situ or Container	Comments
Water Temp	deg C	-0.21	1133		YSI 554	In-Situ	
pH	s.u.	7.61					
Sp. Conductivity	uS/cm	371					
Conductivity	uS/cm	193					
DO Saturation	%	86.5					
DO	mg/L	12.69					
Baro Press	mmHg	598.0					
ORP	RmV	210.4					
Turbidity	NTU	3.02		AV	MicroTPI		2.98, 2.89, 3.20
Discharge	cfs	1.25		AV	Marsh McBirney		
H2S	mg/L	0.0	1145	AV	HS-C		0.0, 0.0
H2S	mg/L	0.0	1250	AV	Colorimeter		0.0, 0.0
Color:	Clear / White / Yellow / Brown / Green / Blue / Other						
Odor:	None / Mild / Mod / Strong						
Effervescence:	None / Mild / Mod / Strong						
Sediment:	None / Light / Mod / Heavy						
				Bubbles: None / Low / Mod / High			
				VOA Headspace: None / ≤ Pea Size / ≥ Pea Size			
Lab Analysis: Rule 609 / COA 9 / COA 22 / Other							
Field Filtered: Yes / No Filter Size: NA No. Filters used: NA							

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 BWQ Surface Water Monitoring Field Form

Landowner Comments on water quality:

None

Additional information:

Water was mostly frozen over 1-2 inches, a few spots were not frozen. Was able to break the ice for sampling and discharge measurements. Couple inches of snow on the ground.

No landowners or WPX representatives present for sampling.

Calibration Information			Date: 12-9-15			Location: WWL office		
Instrument	Parameter	Units	Time	Calibration Standard Value	Calibration Standard Temp (°C)	Instrument Reading of Standard	Adjusted Reading	Comments
	pH	s.u.	0836	7.0	22.26	7.05	7.00	
	pH	s.u.	0838	4.01	22.32	3.96	4.01	
	pH	s.u.	0840	10.01	22.25	9.91	9.99	
	SpC	uS/cm	0832	2070	22.25	2048	2070	
	SpC	uS/cm						
	DO	%	0847	44.6mmHg	22.16	83.9	84.8	
	DO	%						
	ORP	RmV						
	Turbidity	NTU						

Beaver cr. 2

[illegible]

Field Notes:

4.4

~~left bank~~ right bank looking downstream: 3.4 ft
left bank: 10.9 ft

WPX BWQ Surface Water Monitoring Field Form

Project Information

Project:	BWQ: RU 11-7	Sample Purpose:	COA 9 Annual
Site Name (Well Pad):	RU 11-7	Site API:	045-06818
Station Name:	Savage Beaver Creek 2	Sample Date:	1-27-16
COGCC Facility ID:	753174	Start Time:	1020
Field Sample ID:	Beaver Cr 2	End Time:	1030
Landowner Name:	Joan Savage	Sample Time:	1025
Landowner Address:	PO Box 1926, Rifle, CO 81650	Sample Team:	SUB, NWS
Water Right/Well Owner:	NA	Observer:	SUB
Water Right/Well Permit:	NA	Lead Signature/Date:	J. Good: 1-28-16

Station Information

Station Description:	Weak riffle section ~100 ft off Beaver Cr. Rd.		
Approximate Distance to Well Pad:	5340 ft.		
Station Type:	<u>Stream</u> / Spring / Seep / Pond / Lake / NPDES Outfall / Other:		
Sampling Location:	Bank / Pipe / <u>Wading</u> / Boat / Bridge / Hose bib / Tank / Other:		
Sampling Location Description:	Pool / <u>Riffle</u> / Eddy / Backwater / Open / Channel / Braided / Other:		
Sampling Location Width:	6.5 ft.	Sampling Location Depth:	0.25 ft
GPS Location:	Zone	x - 107.83228	y 39.47212 z 6416 ft

Weather Conditions

Sky:	<u>Clear</u> / Scattered / Cloudy / Overcast	Estimated Air Temp (deg F):	25°
Precipitation:	<u>None</u> / Light / Moderate / Heavy	Precip Type:	<u>None</u> / Rain / Sleet / Hail / Snow
Wind:	Calm / <u>Light</u> / Mod / Strong	Wind Speed/Direction:	Q

Field Measurements

Parameter	Units	Reading	Time	Flag Code	Instrument	In-situ or Container	Comments
Water Temp	deg C	-0.41	1025		YSI 556	IN-SITU	
pH	s.u.	4.93					
Sp. Conductivity	uS/cm	390					
Conductivity	uS/cm	201					
DO Saturation	%	107.1					
DO	mg/L	15.68					
Baro Press	mmHg	602.1					
ORP	RmV	263.1					
Turbidity	NTU	3.61		AV	microTPN		3.24, 3.79, 3.80
Discharge		NM					

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

Lab Analysis:	Rule 609 / COA 9 / COA 22 / <u>other</u> Total coliform
Field Filtered:	Yes / <u>No</u> Filter Size: NA No. Filters used: NA

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 BWQ Surface Water Monitoring Field Form

Landowner Comments on water quality:

None

Additional information:

Analysis for total coliform only.

At least 2 ft of snow on the ground. Beaver Creek is partially frozen over.

No WPX representative or landowner present for sampling.

Calibration info on Yellow Jacket spg

Calibration Information			Date: 1-27-16			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						

WPX BWQ Surface Water Monitoring Field Form

Project Information			
Project:	BWD: RU 11-7	Sample Purpose:	Form 15 Annual
Site Name (Well Pad):	RU 11-7	Site API:	045-06818
Station Name:	BEAVER CREEK UP	Sample Date:	12-9-15
COGCC Facility ID:	754591	Start Time:	1350
Field Sample ID:	Beaver Cr. Up	End Time:	1500
Landowner Name:	Youderg Beaver Cr Ranch	Sample Time:	1400
Landowner Address:	215 S 10 th St, Sac City, IA	Sample Team:	1400 SLK, NWS
Water Right/Well Owner:	NA	Observer:	NWS
Water Right/Well Permit:	NA	Lead Signature/Date:	J. Kipp 12-16-15

Station Information			
Station Description: Shallow pool near riffle upgradient of RU 11-7 pit.			
Approximate Distance to Well Pad: 2,590 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:			
Sampling Location Width: 8 ft.		Sampling Location Depth: 0.8 ft	
GPS Location:	Zone	x -107.83150	y 39.45672 z 7015

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:	Q

Field Measurements							
Parameter	Units	Reading	Time	Flag Code	Instrument	In-situ or Container	Comments
Water Temp	deg C	-0.10	1405		YSI 556	in-situ	
pH	s.u.	7.88					
Sp. Conductivity	uS/cm	365					
Conductivity	uS/cm	190					
DO Saturation	%	89.6					
DO	mg/L	13.07					
Baro Press	mmHg	583.6					
ORP	RmV	174.6					
Turbidity	NTU	2.69		AV	microTPI		2.72, 2.84, 2.53
Discharge	cks	2.19			Marsh McBrney		
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 609 / COA 9 / COA 22 / Other Cations, Anions, TPS, BTEX, DRO							
Field Filtered: Yes / No Filter Size: NA No. Filters used: NA							

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 BWQ Surface Water Monitoring Field Form

Landowner Comments on water quality:

None

Additional information:

Most of the upper Beaver Creek section is frozen over 1-2 inches. Few inches of snow on the ground. Was able to break the ice.

NO WPX representative or landowner present for sampling.

Calibration info on Beaver Cr. 2

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						

WPX BWQ Surface Water Monitoring Field Form

Project Information			
Project:	BWQ: KU 11-7	Sample Purpose:	COA 9 - Annual
Site Name (Well Pad):	KU 11-7	Site API:	045-06818
Station Name:	Federal 5595	Sample Date:	12-9-15
COGCC Facility ID:	752709	Start Time:	1220
Field Sample ID:	Yellow Jacket Spg	End Time:	1250
Landowner Name:	Burn CO River Valley Office	Sample Time:	1240
Landowner Address:	2300 River Frontage Rd, Silt	Sample Team:	SLK, NWS
Water Right/Well Owner:	Burn	Observer:	SLK
Water Right/Well Permit:	Yellow Jacket Spring	Lead Signature/Date:	J. Kipp 12-16-15

Station Information			
Station Description:	2" poly pipe flowing into stock tank		
Approximate Distance to Well Pad:	4,200 ft		
Station Type:	Stream / Spring / Seep / Pond / Lake / NPDES Outfall / Other:		
Sampling Location:	Bank / Pipe / Wading / Boat / Bridge / Hose bib / Tank / Other: End of pipe		
Sampling Location Description:	Pool / Riffle / Eddy / Backwater / Open / Channel / Braided / Other: End of pipe		
Sampling Location Width:	NA	Sampling Location Depth:	NA
GPS Location:	Zone	x -107.80938	y 39.463996 z 7540 ft

Weather Conditions			
Sky:	Clear / Scattered / Cloudy / Overcast	Estimated Air Temp (deg F):	80
Precipitation:	None / Light / Moderate / Heavy	Precip Type:	None / Rain / Sleet / Hail / Snow
Wind:	Calm / Light / Mod / Strong	Wind Speed/Direction:	0

Field Measurements							
Parameter	Units	Reading	Time	Flag Code	Instrument	In-situ or Container	Comments
Water Temp	deg C	4.51	1314		YSI 556	container	
pH	s.u.	6.95					
Sp. Conductivity	uS/cm	733					
Conductivity	uS/cm	446					
DO Saturation	%	27.9					
DO	mg/L	2.93					
Baro Press	mmHg	576.2					
ORP	RmV	-42.2					
Turbidity	NTU	1.14	1245	AV	microTPI		1.23, 1.14, 1.06
Discharge	gpm	0.145	1257		container/watch		550 ml/min
+25	mg/L	0.0	1300	AV, E	HS-C		0.0, 0.0
+25	mg/L	0.02	1250	AV	Colorimeter		0.02, 0.02
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 609 / COA 9 / COA 22 / Other						
Field Filtered:	Yes / No	Filter Size:	NA	No. Filters used:	NA		

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 BWQ Surface Water Monitoring Field Form

Landowner Comments on water quality:

None

Additional information:

No landowners or WPX representatives present for sampling.

Calibration info on Beaver Cr. 2

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						

WPX BWQ Surface Water Monitoring Field Form

Project Information			
Project:	BWQ: RU 11-7	Sample Purpose:	COA 9 Annual
Site Name (Well Pad):	RU 11-7	Site API:	045-06818
Station Name:	Federal 5595	Sample Date:	1-27-14
COGCC Facility ID:	752709	Start Time:	0940
Field Sample ID:	Yellow Jacket Spg	End Time:	0950
Landowner Name:	BLM CO River Valley Office	Sample Time:	0945
Landowner Address:	2300 River Frontage Rd, Silt	Sample Team:	SLG, NWS
Water Right/Well Owner:	BLM	Observer:	NWS
Water Right/Well Permit:	Yellow Jacket Spring	Lead Signature/Date:	[Signature] 1-28-16

Station Information			
Station Description: 2" poly pipe flowing into stock tank			
Approximate Distance to Well Pad: 4200 ft			
Station Type: Stream / <u>Spring</u> / Seep / Pond / Lake / NPDES Outfall / Other:			
Sampling Location: Bank / <u>Pipe</u> / Wading / Boat / Bridge / Hose bib / Tank / Other:			
Sampling Location Description: Pool / Riffle / Eddy / Backwater / Open / Channel / Braided / Other: <u>End of Pipe</u>			
Sampling Location Width: N/A		Sampling Location Depth: NA	
GPS Location:	Zone	x -107.80938	y 39.463996 z 7540 ft

Weather Conditions			
Sky:	<u>Clear</u> / Scattered / Cloudy / Overcast	Estimated Air Temp (deg F): 25°	
Precipitation:	<u>None</u> / Light / Moderate / Heavy	Precip Type: <u>None</u> / Rain / Sleet / Hail / Snow	
Wind:	Calm / <u>Light</u> / Mod / Strong	Wind Speed/Direction: Q	

Field Measurements							
Parameter	Units	Reading	Time	Flag Code	Instrument	In-situ or Container	Comments
Water Temp	deg C	2.27	0945		YSI 556	container	
pH	s.u.	4.73					
Sp. Conductivity	uS/cm	650					
Conductivity	uS/cm	368					
DO Saturation	%	15.9 ↓					
DO	mg/L	2.10 ↓					
Baro Press	mmHg	583.0					
ORP	RmV	83.4 ↓					
Turbidity	NTU	1.19		AV	MicroTPW		1.06, 1.49, 1.02
Discharge	gpm	0.16					1000 ml/min
Color: <u>Clear</u> / White / Yellow / Brown / Green / Blue / Other							
Odor: None / <u>Mild</u> / Mod / Strong							
Effervescence: <u>None</u> / Mild / Mod / Strong				Bubbles: <u>None</u> / Low / Mod / High			
Sediment: <u>None</u> / Light / Mod / Heavy				VOA Headspace: <u>None</u> / ≤ Pea Size / ≥ Pea Size			
Lab Analysis: Rule 609 / COA 9 / COA 22 / Other: <u>Total coliform + BART</u>							
Field Filtered: Yes / <u>No</u>		Filter Size: <u>NA</u>		No. Filters used: <u>NA</u>			

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 BWQ Surface Water Monitoring Field Form

Landowner Comments on water quality:

None

Additional information:

Analysis for total coliform and BART only.

At least 2 ft of snow on the ground. Pipe was mostly covered in snow but water still flowed at ~0.14 gpm.

No WPX representatives or landowners present for sampling.

Calibration Information			Date: 1-27-16			Location:		
Instrument	Parameter	Units	Time	Calibration Standard Value	Calibration Standard Temp (°C)	Instrument Reading of Standard	Adjusted Reading	Comments
YSI 556	pH	s.u.	0717	7.0	21.33	7.14	7.00	
	pH	s.u.	0720	10.01	21.33	9.91	10.01	
	pH	s.u.	0727	4.01	21.34	3.96	4.00	
	SpC	uS/cm	0714	8974	21.38	8629	8974	
	SpC	uS/cm						
	DO	%	0730	10.92mmHg	20.56	73.4	85.4	
	DO	%						
	ORP	RmV						
	Turbidity	NTU						

ATTACHMENT C

Data Quality Evaluation

QUALITY CONTROL EVALUATION
WPX Completions Pit RU 11-7
Samples: Beaver Cr 2, Yellow Jacket Spg, and Beaver Cr Up
Event: December 2015 & January 2016

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 (TDS) calculated versus measured ratio. WWL assigned additional qualifiers to analytical results as necessary.

Field Procedures

WWL conducted field sampling procedures in accordance with the WPX SAP. Sampling Method 1 – submerged inverted bottles for surface water sampling procedures, described in the WPX SAP, was used to collect sample Beaver Cr 2, and Sampling Method 2 – top-filling for surface water sampling was used to collect Yellow Jacket Spg and Beaver Cr Up. Sampling of Yellow Jacket Spg was conducted at an end-of-pipe location (sample tubing could not readily be connected to the pipe opening). Dissolved gas bottles preserved with hydrochloric acid were filled directly from the end-of-pipe discharge to reduce potential further degassing caused by turbulence in an open collection transfer container. Total coliform for samples Yellow Jacket Spg and Beaver Cr 2 and BART for sample Yellow Jacket Spg were recollected January 27th, 2016 for analysis due to a laboratory error for the original sample; WWL qualified this data as estimated. No other field procedure deviations occurred that were cause for data qualification.

COC

The chain-of-custody forms were reviewed for correct and complete sample IDs, requested analysis, and other pertinent information. The analytes requested on the COCs matched the requirements of COA 9 and Form 15. DRO (diesel range organics) and GRO (gasoline range organics) were designated on the COCs in place of TPH, a required analysis for COA 9. No errors or pertinent information was observed, and no corrections were needed.

Sample Receipt

Samples were received by ALS in one cooler within the temperature range criteria ($4^{\circ}\text{C} \pm 2^{\circ}\text{C}$). Custody seals were intact. No other quality control issues were reported on the sample receipt form. No qualifiers were assigned to results based on sample receipt conditions.

Holding Times

Laboratory pH associated with all samples and TDS associated with Beaver Cr 2 were analyzed out of holding time; WWL assigned an “H” qualifier to indicate the results are estimated. All other analyses were conducted within recommended holding times.

Analytical Methods

The analytical methods used by ALS were checked for consistency with the analytical schedule described in the WPX SAP. Analytical methods were found to be consistent with the following modifications: Diesel Range Organics (TPH extractables) were analyzed based on methods 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.

Beaver Cr 2 and Beaver Cr Up: A dilution factor of 10 was applied for barium, boron, calcium, iron, magnesium, manganese, potassium, selenium, sodium, and strontium. All other analytes had a dilution factor of 1.

Yellow Jacket Spg: A dilution factor of 10 was applied for barium, boron, calcium, iron, magnesium, manganese, potassium, selenium, sodium, and strontium; and a dilution factor of 5 was applied for chloride. All other analytes had a dilution factor of 1.

ALS reports samples at the detection limit as “not detected” or “ND” rather than reporting results as less than the reporting or detection 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 COA 9 and Form 15 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. 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 percent difference calculations were performed for each sample; if the CAB exceeded $\pm 5\%$, i.e. less than 95% or greater than 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 calculations for the samples are as follows:

- Beaver Cr 2: 2.015%
- Yellow Jacket Spg: 6.361%
- Beaver Cr Up: 1.955%

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 TDS versus calculated TDS were computed; 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 or greater than 1.5, 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 calculations for samples are as follows:

- Beaver Cr 2: 1.16
- Yellow Jacket Spg: 1.24
- Beaver Cr Up: 1.26

Yellow Jacket Spg and Beaver Cr Up slightly exceeded the TDS ratio criteria. However, 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, therefore no 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. Trip blanks test for potential contamination during shipping and sampling field procedures. For this project, trip blanks are analyzed for volatiles only. There were no detections of volatiles (benzene, toluene, ethylbenzene, and xylenes; BTEX) in the analyzed trip blank samples. No data were qualified based on trip blank analytical results.

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), and continuing calibration verification standard (CCVs).

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 without qualification. Boron and strontium were detected above the MDL and below the RL in the MB associated with all samples; the data was qualified with a "J" to indicate the result is estimated; no acceptance criteria were exceeded.

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 (MDL) 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 will not be broadly qualified by WWL.

ALS selected field investigation sample Beaver Cr 2 for testing matrix quality control for MS and MSD for DRO by Method SW8015M. ALS did not select Yellow Jacket Spg or Beaver Cr Up field investigation

samples for MS or MSD testing. ALS selected a number of other samples for all other MS and MSD based on the analytical methods 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 because of accuracy.

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. 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 within this Attachment.

DATA QUALITY REVIEW SHEET

Facility ID: 753174
 Station Name: Savage Beaver Creek 2
 Sample Date: 12/9/2015
 Field Sample ID: Beaver Cr 2

Project: WPX BWQ: RU 11-7 Annual
 Lab Work Order: 1512159
 QA/QC Review Date: 1/25/2016
 Reviewer: S. Goodwin

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. Receipt form is without discrepancies? <i>If no, list in comments.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. All samples analyzed for the requested analyses?	<input type="checkbox"/>	<input checked="" 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 (other than lab pH)?	<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. 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. Laboratory qualifiers for data (other than non-detect)? <i>List in comments.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Additional qualifiers assigned (other than pH)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
16. Are corrective actions required? <i>If yes, list actions and dates to be completed by:</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Corrective Action</i>	<i>Date to be completed</i>		
Resample for total coliform due to lab error.	1/29/2016		

Calculated Parameters	Calculated Value	Lab Value	Ratio/Percent Difference	Acceptable Limit	Meets QC Criteria?
Cation/Anion Balance, % (CAB)	2.015	N/A	N/A	±5%	<input checked="" type="checkbox"/>
Total Dissolved Solids, mg/L (TDS)	268	230	1.16	0.8 – 1.2	<input checked="" type="checkbox"/>
Specific Conductance, µS/cm (SpC)	343	344	1.00	0.8 – 1.2	<input checked="" type="checkbox"/>

Comments: Laboratory pH and TDS analyzed out of analysis holding time, WWL qualified with “H”; result considered estimated. ALS did not analyze for coliform; sample recollected 1/27/16 for analysis, WWL qualified with “E”; results considered estimated. “J” qualifier assigned to fluoride, total phosphorus, boron, iron, manganese, and potassium sample results and to boron and strontium method blank to indicate a result greater than the method detection limit but less than the reporting limit.

DATA QUALITY REVIEW SHEET

Facility ID: 754591
 Station Name: Beaver Creek Up
 Sample Date: 12/9/2015
 Field Sample ID: Beaver Cr Up

Project: WPX BWQ: RU 11-7 Annual
 Lab Work Order: 1512160
 QA/QC Review Date: 1/25/2016
 Reviewer: S. Goodwin

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. Receipt form is without discrepancies? <i>If no, list in comments.</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 (other than lab pH)?	<input checked="" type="checkbox"/>	<input 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. 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. Laboratory qualifiers for data (other than non-detect)? <i>List in comments.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Additional qualifiers assigned (other than pH)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
16. Are corrective actions required? <i>If yes, 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>		
None			

Calculated Parameters	Calculated Value	Lab Value	Ratio/Percent Difference	Acceptable Limit	Meets QC Criteria?
Cation/Anion Balance, % (CAB)	1.955	N/A	N/A	±5%	<input checked="" type="checkbox"/>
Total Dissolved Solids, mg/L (TDS)	265	210	1.26	0.8 – 1.2	<input type="checkbox"/>
Specific Conductance, µS/cm (SpC)	313	337	0.93	0.8 – 1.2	<input checked="" type="checkbox"/>

Comments: Laboratory pH analyzed out of analysis holding time, WWL qualified with “H”; result considered estimated. “J” qualifier assigned to fluoride, boron, iron, manganese, and potassium sample results and to boron and strontium method blank to indicate a result greater than the method detection limit but less than the reporting limit. TDS ratio slightly outside of QC criteria, but data not qualified.

DATA QUALITY REVIEW SHEET

Facility ID: 752709
 Station Name: Federal 5595
 Sample Date: 12/9/2015
 Field Sample ID: Yellow Jacket Spg

Project: WPX BWQ: RU 11-7 Annual
 Lab Work Order: 1512161, 1601317
 QA/QC Review Date: 1/25/2016
 Reviewer: S. Goodwin

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. Receipt form is without discrepancies? <i>If no, list in comments.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. All samples analyzed for the requested analyses?	<input type="checkbox"/>	<input checked="" 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 (other than lab pH)?	<input checked="" type="checkbox"/>	<input 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. 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. Laboratory qualifiers for data (other than non-detect)? <i>List in comments.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Additional qualifiers assigned (other than pH)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
16. Are corrective actions required? <i>If yes, list actions and dates to be completed by:</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Corrective Action</i>	<i>Date to be completed</i>		
Resample for BART and total coliform due to lab error.	1/29/2016		

Calculated Parameters	Calculated Value	Lab Value	Ratio/Percent Difference	Acceptable Limit	Meets QC Criteria?
Cation/Anion Balance, % (CAB)	6.361	N/A	N/A	±5%	<input type="checkbox"/>
Total Dissolved Solids, mg/L (TDS)	509	410	1.24	0.8 – 1.2	<input type="checkbox"/>
Specific Conductance, µS/cm (SpC)	612	670	0.91	0.8 – 1.2	<input checked="" type="checkbox"/>

Comments: Laboratory pH analyzed out of analysis holding time, WWL qualified with “H”; result considered estimated. ALS did not analyze for BART or coliform; sample recollected 1/27/16 for analysis, WWL qualified with “E”; results considered estimated. “J” qualifier assigned to boron and iron sample results and to boron and strontium method blank to indicate a result greater than the method detection limit but less than the reporting limit. CAB and TDS ratio slightly outside of QC criteria, but data not qualified.

ATTACHMENT D

Summary of Analytical Results

WPX BWQ: RU 11-7 Analytic Summary													
Station Name Facility ID Sample Date Field Sample ID Lab Sample ID Sampling Event				Federal 5595					Savage NWSE S1 7S 94W 752708	Savage Beaver Creek 2			Beaver Creek Up
				752709						753174			754591
				6/27/2013	3/5/2014	3/5/2014	3/5/2015	12/9/2015	6/27/2013	3/5/2014	12/18/2014	12/9/2015	12/9/2015
				RU 11-7-Yellow Jacket Spg 1306419-1 Baseline	Yellow Jacket Spg D55643-1 Annual 2014	SPG RU 11-7 ^a D55644-1 Annual 2014 - Dup	Yellow Jacket Spg 1503069-1 Annual 2014/2015	Yellow Jacket Spg 1512161-1 Annual 2015	RU 11-7-Beaver Creek 1306419-2 Baseline	BEAVER CR 2 D55647-1 Annual 2014	BEAVER CR 2 D65992-1 Annual 2014/2015	BEAVER CR 2 1512159-1 Annual 2015	Beaver Cr Up 1512160-1 Annual 2015
	Reporting Units	ALS Analytic Method	AMS Analytic Method	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Inorganics													
Alkalinity, Total as CaCO3	mg/l	SM2320B	SM 2320B-2011	330	300	300	310	310	120	181	161	170	170
Alkalinity, Bicarbonate as CaCO3	mg/l	SM2320B	SM 2320B-2011	330	300	300	310	310	120	177	161	170	170
Alkalinity, Carbonate	mg/l	SM2320B	SM 2320B-2011	ND	ND	ND	ND	ND	ND	4.1	ND	ND	ND
Bromide	mg/l	EPA300.0	EPA 300.0/SW846 9056	0.22	0.074	0.071	0.1 J	0.28	ND	ND	ND	ND	ND
Chloride	mg/l	EPA300.0	EPA 300.0/SW846 9056	9.1	8.2	8.3	9.9	54	0.8	3.4	1.8	2.4	1.5
Fluoride	mg/l	EPA300.0	EPA 300.0/SW846 9056	0.33	0.23	0.21	0.19	0.16	0.16	0.12	0.11	0.057 J	0.061 J
Sulfate	mg/l	EPA300.0	EPA 300.0/SW846 9056	11 ^b	11.4	11.4	10	13	12	20.9	19	19	18
Nitrogen, Nitrate	mg/l	EPA300.0	EPA 300.0/SW846 9056	0.21	0.11	0.11	0.15 J	ND	0.23 H	0.2	0.22	0.27	0.31
Nitrogen, Nitrite	mg/l	EPA300.0	EPA 300.0/SW846 9056	ND	ND	ND	ND	ND	ND H	ND	ND	ND	ND
pH	s.u.	SM4500-H	SM4500HB+-2011/9040C	7.42	7.27 H	7.34 H	7.4 H	7.29 H	8.37	8.21 H	8.18 H	8.18 H	8.23 H
Phosphorus, Total	mg/l	EPA365.2	HACH8190/SM4500P-B/E	0.25	0.12	0.13	0.13	0.2	ND	0.43	0.015	0.048 J	NM
Solids, Total Dissolved	mg/l	SM2540C	SM 2540C-2011	340	366	370	360	410	150	242	244	230 H	210
Specific Conductivity	umhos/cm	SM2510B	SM 2510B-2011	640	559	564	609	670	247	365	289	344	337
Dissolved Metals²													
Barium	ug/L	EPA200.8	EPA 200.7	120	108	112	100	140	37	61.2	50.9	56	56
Boron	ug/L	EPA200.8	EPA 200.7	ND	ND	ND	19 J	25 J	ND	9.5	13.4 J	41 J	27 J
Calcium	ug/L	EPA200.8	EPA 200.7	94000	91800	101000	90000	97000	31000	50900	44900	49000	48000
Iron	ug/L	EPA200.8	EPA 200.7	180	50.1	61.2	13 J	32 J	ND	60.7	12	35 J	25 J
Magnesium	ug/L	EPA200.8	EPA 200.7	17000	18200	18900	18000	19000	5600	12100	10000	11000	11000
Manganese	ug/L	EPA200.8	EPA 200.7	770	668	733	660	540	ND	4.1	2.7 J	1.4 J	1.4 J
Potassium	ug/L	EPA200.8	EPA 200.7	2400	1830	1850	1400	1500	ND	1060	889 J	650 J	590 J
Selenium	ug/L	EPA200.8	EPA 200.8	ND	0.96	0.91	1.6	ND	ND	ND	ND	ND	ND
Sodium	ug/L	EPA200.8	EPA 200.7	14000	12200	12500	13000	13000	11000	15000	13600	15000	15000
Strontium	ug/L	EPA200.8	EPA 200.7	450	453	466	420	530	190	337	298	330	350
Organics													
TPH-DRO (C10-C28)	mg/l	SW8015M	SW846-8015B	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TPH-GRO (C6-C10) ¹	ug/l	SW8260_25/SW8015	SW846 8260B	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	SW8260_25	SW846 8260B	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ug/l	SW8260_25	SW846 8260B	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	SW8260_25	SW846 8260B	0.41 J	ND	ND	ND	0.55 J	ND	ND	ND	ND	ND
Xylene (total)	ug/l	SW8260_25	SW846 8260B	NM	ND	ND	ND	ND	NM	ND	ND	ND	ND
Dissolved Gases²													
Ethane	ug/l	RSK175	RSK175 MOD	ND	ND	ND	ND	ND	ND	ND	ND	ND	NM
Methane	ug/l	RSK175	RSK175 MOD	93	43.6	46.3	ND	ND	ND	ND	ND	ND	NM
Propane	ug/l	RSK175	RSK175 MOD	ND	ND	ND	ND	ND	ND	ND	ND	ND	NM

WPX BWQ: RU 11-7 Analytic Summary													
Station Name Facility ID Sample Date Field Sample ID Lab Sample ID Sampling Event				Federal 5595					Savage NWSE S1 7S 94W 752708	Savage Beaver Creek 2			Beaver Creek Up
				752709					752708	753174			754591
				6/27/2013 RU 11-7-Yellow Jacket Spg 1306419-1 Baseline	3/5/2014 Yellow Jacket Spg D55643-1 Annual 2014	3/5/2014 SPG RU 11-7 ^a D55644-1 Annual 2014 - Dup	3/5/2015 Yellow Jacket Spg 1503069-1 Annual 2014/2015	12/9/2015 Yellow Jacket Spg 1512161-1 Annual 2015	6/27/2013 RU 11-7-Beaver Creek 1306419-2 Baseline	3/5/2014 BEAVER CR 2 D55647-1 Annual 2014	12/18/2014 BEAVER CR 2 D65992-1 Annual 2014/2015	12/9/2015 BEAVER CR 2 1512159-1 Annual 2015	12/9/2015 Beaver Cr Up 1512160-1 Annual 2015
	Reporting Units	ALS Analytic Method	AMS Analytic Method	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Biological³													
Iron Reducing Bacteria	cfu/ml or nu	BART	HACH IRB-BART	1	74500	74500	35000	35000 E ^c	1	9000	9000	9000	NM
Slime Forming Bacteria	cfu/ml or nu	BART	HACH SLYM-BART	1	6500	12500	66500	350000 E ^c	ND	6500	ND	66500	NM
Sulfate Reducing Bacteria	cfu/ml or nu	BART	HACH SRB-BART	1	5000	5000	1200	18000 E ^c	1	359000	5000	700000	NM
Total Coliform ⁴	MPN/100ml			NM	NM	NM	NM	24.3 E ^c	NM	NM	NM	59.1 E ^c	NM
E. Coli ⁴	MPN/100ml			NM	NM	NM	NM	6.3 E ^c	NM	NM	NM	1 E ^c	NM
Field Parameters													
Water temp, field	deg C	Field	Field	16.4	3.05	2.22	1.54	4.51	10.6	2.02	0.57	-0.21	-0.10
pH, field	s.u.	Field	Field	7.15	7.02	7.12	1.9	6.95	8	8.2	8.06	7.61	7.88
Specific cond., field	uS/cm	Field	Field	633	622	627	630	733	240.7	375	347	371	365
Conductivity, field	uS/cm	Field	Field	530	361	356	349	446	174.4	215	180	193	190
DO saturation, field	%	Field	Field	20.3	46.8	38.6	31.3	22.9	82.7	83.6	70.5	86.5	89.6
DO, field	mg/l	Field	Field	1.96	6.22	5.2	4.31	2.93	9.21	11.54	10.09	12.69	13.07
ORP, field	mv	Field	Field	-25.3	70.4	42.1	250.5	-42.2	139.9	225.9	226.8	210.4	174.6
Turbidity, field	ntu	Field	Field	0.65	0.85 AV	0.98 AV	0.21 AV	1.14 AV	6.22	6.02 AV	2.08 AV	3.02 AV	2.69 AV
H2S	mg/l	Field	HACH or Colorimeter	0.1 E	0 AV	0 AV	0 E	0.02 AV	0.015 E	0 AV	0.01 AV	0.0 AV	NM
Discharge	cfs	Field	Field	0.17	0.139	0.158	0.141	0.145	1969	772	2.37	1.25	2.19
Color	nu	Field	Field	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear
Odor	nu	Field	Field	None	None	None	None	None	None	None	None	None	None
Effervescence	nu	Field	Field	None	None	None	None	None	Slight	None	None	None	None
Sediment	nu	Field	Field	None	None	None	None	None	Low	None	None	None	None
Bubbles	nu	Field	Field	None	None	None	None	None	None	None	None	None	None
VOA Headspace	nu	Field	Field	None	None	None	None	None	None	None	None	None	None

Notes

² Blind field duplicate

^b Reanalyzed by lab 8/22/13 due to error in initial analysis, dilution factor adjusted

^c Resampled 1/27/16 due to lab error; result estimated

¹ ALS TPH-GRO units converted from mg/l to ug/l

² Units converted from mg/l to ug/l

³ A result of 1 indicates the presence of bacteria

⁴ Analysis performed by Mesa County's Health Department Regional Laboratory

U = not detected at the reporting limit or method detection limit

NM = not measured

J = estimated value; lab QA indicates poor precision

H = hold time exceeded; estimated value

AV = averaged value

E = concentration estimated

ATTACHMENT E

Laboratory Analytical Summary Report



1512159

GC/MS Volatiles:

The sample was analyzed using GC/MS following the current revision of SOP 525 based on SW-846 Method 8260C. The sample was 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. If the target analyte is detected (present), then the sample will be reported with the estimated colony forming units/mL (cfu/mL) as provided by the manufacturer based on the day reaction was observed.

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 2 prior to analysis.

All acceptance criteria were met.

**Inorganics:**

The sample was analyzed following MCAWW, EMSL and 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 ⁺ B	1126
Specific conductance	SM2510B	1128
Total phosphorus	365.2	1119
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
Total Nitrates	300.0 Revision 2.1	1113
Nitrite as N	300.0 Revision 2.1	1113
Sulfate	300.0 Revision 2.1	1113

All acceptance criteria were met.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1512159

Client Name: Western Water and Land, Inc.

Client Project Name: WPX RU 11-7 BWQ

Client Project Number:

Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Beaver Cr 2	1512159-1		WATER	09-Dec-15	11:15



2225 Commerce Drive, Fort Collins, Colorado 80524
 TFE: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

Chain-of-Custody

Form 202r8

*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.

<div>4 of 20</div> <div>Comments:</div>	<div>QC PACKAGE (check below)</div> <table> <tr> <td data-bbox="1328 1247 1339 1428">LEVEL II (Standard QC)</td><td data-bbox="1339 1247 1364 1428"></td></tr> <tr> <td data-bbox="1328 1428 1339 1518">LEVEL III (Std QC + forms)</td><td data-bbox="1339 1428 1364 1518"></td></tr> <tr> <td data-bbox="1328 1518 1339 1606">LEVEL IV (Std QC + forms + raw data)</td><td data-bbox="1339 1518 1364 1606"> <input checked="" type="checkbox"/> </td></tr> <tr> <td data-bbox="1328 1606 1339 1696"></td><td data-bbox="1339 1606 1364 1696"></td></tr> </table>	LEVEL II (Standard QC)		LEVEL III (Std QC + forms)		LEVEL IV (Std QC + forms + raw data)	<input checked="" type="checkbox"/>		
LEVEL II (Standard QC)									
LEVEL III (Std QC + forms)									
LEVEL IV (Std QC + forms + raw data)	<input checked="" type="checkbox"/>								

4 of 20

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY	<i>[Signature]</i>	<i>Endy H P</i>	12-9-15	1000
RECEIVED BY	<i>[Signature]</i>	<i>N/R</i>	12-9-15	1600
RELINQUISHED BY	<i>[Signature]</i>	<i>N. Martinez</i>	12-9-15	1630
RECEIVED BY	<i>[Signature]</i>	<i>Rebecca Morkle</i>	12-10-15	0940
RELINQUISHED BY				
RECEIVED BY				

Preservative Key:

1-HCl	2-HNO ₃	3-H ₂ SO ₄	4-NaOH	5-NaHSO ₄	7-Other	8-4 degrees C	9-5035
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ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: Western Water

Workorder No: 151215-9

Project Manager: ARW

Initials: RAM Date: 12/10/15

1. Does this project require any special handling in addition to standard ALS procedures?			YES	<u>NO</u>
2. Are custody seals on shipping containers intact?		NONE	<u>YES</u>	NO
3. Are Custody seals on sample containers intact?		<u>NONE</u>	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?			<u>YES</u>	NO
5. Are the COC and bottle labels complete and legible?			<u>YES</u>	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)			<u>YES</u>	NO
7. Were airbills / shipping documents present and/or removable?		DROP OFF	<u>YES</u>	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)		N/A	<u>YES</u>	NO
9. Are all aqueous non-preserved samples pH 4-9?		N/A	<u>YES</u>	NO
10. Is there sufficient sample for the requested analyses?			<u>YES</u>	NO
11. Were all samples placed in the proper containers for the requested analyses?			<u>YES</u>	NO
12. Are all samples within holding times for the requested analyses?			<u>YES</u>	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)			<u>YES</u>	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: <u> </u> < green pea <u> </u> > green pea		N/A	<u>YES</u>	NO
15. Do any water samples contain sediment? Amount of sediment: <u> </u> dusting <u> </u> moderate <u> </u> heavy		Amount N/A	YES	<u>NO</u>
16. Were the samples shipped on ice?			<u>YES</u>	NO
17. Were cooler temperatures measured at 0.1-6.0°C?		IR gun used*: <u>#2</u> #4	RAD ONLY	<u>YES</u> NO
Cooler #: <u>1</u>				
Temperature (°C): <u>2.6</u>				
No. of custody seals on cooler: <u>1</u>				
DOT Survey/ Acceptance Information	External µR/hr reading: <u>11</u>			
	Background µR/hr reading: <u>11</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? <u>YES</u> / NO / NA (If no, see Form 008.)				

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

If applicable, was the client contacted? YES / NO / NA Contact: _____ Date/Time: _____

Project Manager Signature / Date: [Signature] 12/10/15

ORIGIN ID: RILA (616) 299-1033
 NICK MARTINEZ
 ALS ENVIRONMENTAL
 127 E. 1ST STREET
 PARACHUTE, CO 81635
 UNITED STATES US

SHIP DATE: 09DEC15
 ACTWGT: 47.00 LB
 CAD: 108058167/INET3670
 DIMS: 24x15x15 IN
 BILL RECIPIENT

2.60C

TO **SAMPLE RECEIVING**
ALS LABORATORY GROUP
225 COMMERCE DRIVE

FORT COLLINS CO 80524

(970) 490-1511

REF: 120915-1

INV. PO: PARACHUTE

DEPT.



J153015091001uv

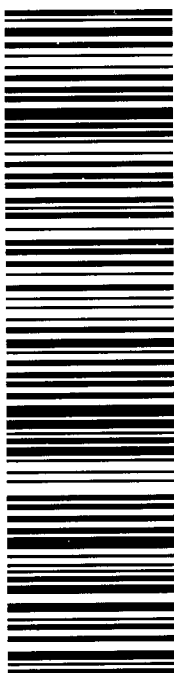
539J1/1308/31D0

TRK# 7751 6602 8842

THU - 10 DEC 3:00P
 STANDARD OVERNIGHT

72 FTCA

80524
 CO-US DEN



After printing this label:

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

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1512159

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: Western Water and Land, Inc.
Project: WPX RU 11-7 BWQ
Sample ID: Beaver Cr 2
Legal Location:
Collection Date: 12/9/2015 11:15

Date: 29-Dec-15
Work Order: 1512159
Lab ID: 1512159-1
Matrix: WATER

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	MDL	Date Analyzed
ALKALINITY AS CALCIUM CARBONATE							
			SM2320B		Prep Date: 12/22/2015	PrepBy: TLB	
BICARBONATE AS CaCO3	170		20	MG/L	1		12/22/2015
CARBONATE AS CaCO3	ND		20	MG/L	1		12/22/2015
TOTAL ALKALINITY AS CaCO3	170		20	MG/L	1		12/22/2015
BIOLOGICAL ACTIVITY REACTION TEST							
			BART		Prep Date: 12/13/2015	PrepBy: CDR	
IRON RELATED BACTERIA	9000		1	cfu/ml	1		12/21/2015
SLIME FORMING BACTERIA	66500		1	cfu/ml	1		12/21/2015
SULFATE REDUCING BACTERIA	700000		1	cfu/ml	1		12/21/2015
DIESEL RANGE ORGANICS							
			SW8015M		Prep Date: 12/16/2015	PrepBy: JFN	
Diesel Range Organics	ND		0.58	MG/L	1	0.17	12/16/2015 17:07
Surr: O-TERPHENYL	101		63-126	%REC	1		12/16/2015 17:07
DISSOLVED GASSES							
			RSK175		Prep Date: 12/21/2015	PrepBy: JFN	
METHANE	ND		1	UG/L	1	1	12/21/2015 13:30
ETHANE	ND		2	UG/L	1	2	12/21/2015 13:30
PROPANE	ND		1	UG/L	1	1	12/21/2015 13:30
GC/MS VOLATILES							
			SW8260_25		Prep Date: 12/11/2015	PrepBy: JXK	
BENZENE	ND		1	UG/L	1	0.3	12/11/2015 18:21
TOLUENE	ND		1	UG/L	1	0.3	12/11/2015 18:21
ETHYLBENZENE	ND		1	UG/L	1	0.3	12/11/2015 18:21
M+P-XYLENE	ND		1	UG/L	1	0.3	12/11/2015 18:21
O-XYLENE	ND		1	UG/L	1	0.3	12/11/2015 18:21
TOTAL XYLENES	ND		1	UG/L	1		12/11/2015 18:21
Surr: 4-BROMOFLUOROBENZENE	110		85-115	%REC	1		12/11/2015 18:21
Surr: DIBROMOFLUOROMETHANE	99		84-118	%REC	1		12/11/2015 18:21
Surr: TOLUENE-D8	101		85-115	%REC	1		12/11/2015 18:21
GASOLINE RANGE ORGANICS	ND		100	UG/L	1	100	12/11/2015 18:21
ION CHROMATOGRAPHY							
			EPA300.0		Prep Date: 12/10/2015	PrepBy: DRH	
BROMIDE	ND		0.2	MG/L	1	0.06	12/10/2015 19:59
CHLORIDE	2.4		0.2	MG/L	1	0.06	12/10/2015 19:59
FLUORIDE	0.057	J	0.1	MG/L	1	0.03	12/10/2015 19:59
NITRATE/NITRITE AS N	0.27		0.1	MG/L	1		12/10/2015 19:59
NITRATE AS N	0.27		0.2	MG/L	1	0.06	12/10/2015 19:59
NITRITE AS N	ND		0.1	MG/L	1	0.03	12/10/2015 19:59
SULFATE	19		1	MG/L	1	0.3	12/10/2015 19:59
METALS BY 200.8							
			EPA200.8		Prep Date: 12/15/2015	PrepBy: CDR	
BARIUM	0.056		0.001	MG/L	10	0.00058	12/16/2015 22:41
BORON	0.041	J	0.05	MG/L	10	0.0069	12/16/2015 22:41
CALCIUM	49		1	MG/L	10	0.1	12/16/2015 22:41
IRON	0.035	J	0.1	MG/L	10	0.025	12/16/2015 22:41
MAGNESIUM	11		0.1	MG/L	10	0.045	12/16/2015 22:41
MANGANESE	0.0014	J	0.002	MG/L	10	0.0007	12/16/2015 22:41

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: Western Water and Land, Inc.

Date: 29-Dec-15

Project: WPX RU 11-7 BWQ

Work Order: 1512159

Sample ID: Beaver Cr 2

Lab ID: 1512159-1

Legal Location:

Matrix: WATER

Collection Date: 12/9/2015 11:15

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	MDL	Date Analyzed
POTASSIUM	0.65	J	1	MG/L	10	0.22	12/16/2015 22:41
SELENIUM	ND		0.001	MG/L	10	0.00068	12/16/2015 22:41
SODIUM	15		1	MG/L	10	0.24	12/16/2015 22:41
STRONTIUM	0.33		0.001	MG/L	10	0.00066	12/16/2015 22:41
PH			SM4500-H		Prep Date: 12/12/2015	PrepBy: TLB	
PH	8.18		0.1	pH	1		12/12/2015
SPECIFIC CONDUCTANCE IN WATER			SM2510B		Prep Date: 12/12/2015	PrepBy: TLB	
SPECIFIC CONDUCTIVITY	344		1	umhos/cm	1		12/12/2015
TOTAL DISSOLVED SOLIDS			SM2540C		Prep Date: 12/16/2015	PrepBy: TLB	
TOTAL DISSOLVED SOLIDS	230		20	MG/L	1		12/17/2015
TOTAL PHOSPHORUS AS P			EPA365.2		Prep Date: 12/28/2015	PrepBy: TLB	
TOTAL PHOSPHORUS	0.048	J	0.05	MG/L	1	0.015	12/29/2015

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: Western Water and Land, Inc.
Project: WPX RU 11-7 BWQ
Sample ID: Beaver Cr 2
Legal Location:
Collection Date: 12/9/2015 11:15

Date: 29-Dec-15
Work Order: 1512159
Lab ID: 1512159-1
Matrix: WATER
Percent Moisture:

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

Radiochemistry:

U or ND - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.
- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.
G - Sample density differs by more than 15% of LCS density.
D - DER is greater than Control Limit
M - Requested MDC not met.
LT - Result is less than requested MDC but greater than achieved MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits
NC - Not Calculated for duplicate results less than 5 times MDC
B - Analyte concentration greater than MDC.
B3 - Analyte concentration greater than MDC but less than Requested 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.
S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

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.
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

ALS Environmental -- FC

Date: 12/29/2015 12:3

Client: Western Water and Land, Inc.

Work Order: 1512159

Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **HC151216-100-1** Instrument ID: **FUELS-1** Method: **SW8015M**

LCS	Sample ID: HC151216-100				Units: MG/L		Analysis Date: 12/16/2015 16:36				
Client ID:		Run ID: HC151216-7A				Prep Date: 12/16/2015			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Diesel Range Organics	8.36	0.576	8		105	36-150				20	
Surr: O-TERPHENYL	0.824		0.8		103	63-126					

MB	Sample ID: HC151216-100				Units: MG/L		Analysis Date: 12/16/2015 15:34				
Client ID:	Run ID: HC151216-7A				Prep Date: 12/16/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Diesel Range Organics	ND	0.58									
Surr: O-TERPHENYL	0.818		0.802		102	63-126					

MS	Sample ID: 1512159-1				Units: MG/L		Analysis Date: 12/16/2015 17:37				
Client ID: Beaver Cr 2			Run ID: HC151216-7A			Prep Date: 12/16/2015			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Diesel Range Organics	6.75	0.573	7.96	0.58	85	36-150				20	
Surr: O-TERPHENYL	0.824		0.796		104	63-126					

The following samples were analyzed in this batch:

1512159-1

Client: Western Water and Land, Inc.
Work Order: 1512159
Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **HC151221-9-2** Instrument ID: **MEE-1** Method: **RSK175**

LCS	Sample ID: HC151221-9				Units: UG/L		Analysis Date: 12/21/2015 12:38				
Client ID:	Run ID: HC151221-9A				Prep Date: 12/21/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
METHANE	147	1	142		103	80-120				25	
ETHANE	276	2	267		104	80-120				25	
PROPANE	396	1	391		101	80-120				25	

LCSD	Sample ID: HC151221-9				Units: UG/L		Analysis Date: 12/21/2015 13:24				
Client ID:	Run ID: HC151221-9A				Prep Date: 12/21/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
METHANE	154	1	142		108	80-120		147	4	25	
ETHANE	291	2	267		109	80-120		276	5	25	
PROPANE	417	1	391		107	80-120		396	5	25	

MB	Sample ID: HC151221-9				Units: UG/L		Analysis Date: 12/21/2015 12:42				
Client ID:		Run ID: HC151221-9A				Prep Date: 12/21/2015			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
METHANE	ND	1									
ETHANE	ND	2									
PROPANE	ND	1									

The following samples were analyzed in this batch:

1512159-1

Client: Western Water and Land, Inc.
 Work Order: 1512159
 Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **IP151215-1-2** Instrument ID: **ICPMS2** Method: **EPA200.8**

LCS	Sample ID: FM151215-1				Units: MG/L		Analysis Date: 12/16/2015 22:37				
Client ID:	Run ID: IM151216-10A2				Prep Date: 12/15/2015			DF: 10			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
BARIUM	0.105	0.001	0.1		105	85-115				20	
BORON	0.974	0.05	1		97	85-115				20	
CALCIUM	10.7	1	10		107	85-115				20	
IRON	4.98	0.1	5		100	85-115				20	
MAGNESIUM	9.97	0.1	10		100	85-115				20	
MANGANESE	0.103	0.002	0.1		103	85-115				20	
POTASSIUM	4.61	1	5		92	85-115				20	
SELENIUM	0.105	0.001	0.1		105	85-115				20	
SODIUM	10.1	1	10		101	85-115				20	
STRONTIUM	0.11	0.001	0.1		110	85-115				20	

MB	Sample ID: FP151215-1				Units: MG/L		Analysis Date: 12/16/2015 22:30				
Client ID:	Run ID: IM151216-10A2				Prep Date: 12/15/2015			DF: 10			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
BARIUM	ND	0.001									
BORON	0.01	0.05									J
CALCIUM	ND	1									
IRON	ND	0.1									
MAGNESIUM	ND	0.1									
MANGANESE	ND	0.002									
POTASSIUM	ND	1									
SELENIUM	ND	0.001									
SODIUM	ND	1									
STRONTIUM	0.00081	0.001									J

The following samples were analyzed in this batch:

1512159-1

Client: Western Water and Land, Inc.
 Work Order: 1512159
 Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **VL151211-3-1** Instrument ID: **HPV1** Method: **SW8260_25**

LCS		Sample ID: VL151211-3			Units: %REC		Analysis Date: 12/11/2015 12:36				
Client ID:		Run ID: VL151211-3A			Prep Date: 12/11/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	26.2		25		105	85-115					
Surr: DIBROMOFLUOROMETHANE	24.7		25		99	84-118					
Surr: TOLUENE-D8	24.7		25		99	85-115					
BENZENE	11	1	10		110	83-117				20	
TOLUENE	10.6	1	10		106	82-113				20	
ETHYLBENZENE	10.1	1	10		101	81-113				20	
M+P-XYLENE	19.7	1	20		98	82-115				20	
O-XYLENE	9.8	1	10		98	81-115				20	

LCSD		Sample ID: VL151211-3			Units: %REC		Analysis Date: 12/11/2015 12:58				
Client ID:		Run ID: VL151211-3A			Prep Date: 12/11/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	26.1		25		105	85-115			0		
Surr: DIBROMOFLUOROMETHANE	24.5		25		98	84-118			1		
Surr: TOLUENE-D8	24.6		25		98	85-115			1		
BENZENE	10.6	1	10		106	83-117		11	4	20	
TOLUENE	10.2	1	10		102	82-113		10.6	4	20	
ETHYLBENZENE	9.91	1	10		99	81-113		10.1	2	20	
M+P-XYLENE	19.1	1	20		95	82-115		19.7	3	20	
O-XYLENE	9.62	1	10		96	81-115		9.8	2	20	

MB		Sample ID: VL151211-3			Units: %REC		Analysis Date: 12/11/2015 15:09				
Client ID:		Run ID: VL151211-3A			Prep Date: 12/11/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	28.1		25		113	85-115					
Surr: DIBROMOFLUOROMETHANE	24.7		25		99	84-118					
Surr: TOLUENE-D8	25.4		25		102	85-115					
BENZENE	ND	1									
TOLUENE	ND	1									
ETHYLBENZENE	ND	1									
M+P-XYLENE	ND	1									
O-XYLENE	ND	1									
TOTAL XYLENES	ND	1									

Client: Western Water and Land, Inc.
Work Order: 1512159
Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **VL151211-3-2** Instrument ID: **HPV1** Method: **SW8260_25**

LCS		Sample ID: VL151211-6				Units: UG/L		Analysis Date: 12/11/2015 14:05			
Client ID:		Run ID: VL151211-3A						Prep Date: 12/11/2015		DF: 1	
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	904	100	1000		90	80-120				20	

LCSD	Sample ID: VL151211-6			Units: UG/L			Analysis Date: 12/11/2015 14:26				
Client ID:	Run ID: VL151211-3A						Prep Date: 12/11/2015		DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	864	100	1000		86	80-120		904	5	20	

MB		Sample ID: VL151211-3				Units: UG/L		Analysis Date: 12/11/2015 15:09			
Client ID:		Run ID: VL151211-3A						Prep Date: 12/11/2015		DF: 1	
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS		ND	100								

The following samples were analyzed in this batch:

1512159-1

Client: Western Water and Land, Inc.
Work Order: 1512159
Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **AK151222-1-2** Instrument ID: **Balance** Method: **SM2320B**

LCS		Sample ID: AK151222-1				Units: MG/L		Analysis Date: 12/22/2015			
Client ID:		Run ID: AK151222-1A1				Prep Date: 12/22/2015		DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL ALKALINITY AS CaCO3	96.7	5	100		97	85-115				15	

MB		Sample ID: AK151222-1			Units: MG/L		Analysis Date: 12/22/2015				
Client ID:		Run ID: AK151222-1A1			Prep Date: 12/22/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	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:

1512159-1

Client: Western Water and Land, Inc.
Work Order: 1512159
Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **IC151210-1-3** Instrument ID: **IC-2** Method: **EPA300.0**

LCS		Sample ID: IC151210-1			Units: MG/L		Analysis Date: 12/10/2015 17:58				
Client ID:		Run ID: IC151210-1A5					Prep Date: 12/10/2015		DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
BROMIDE	4.76	0.2	5		95	90-110				15	
CHLORIDE	4.87	0.2	5		97	90-110				15	
FLUORIDE	1.92	0.1	2		96	90-110				15	
NITRATE AS N	4.83	0.2	5		97	90-110				15	
NITRITE AS N	1.87	0.1	2		94	90-110				15	
SULFATE	19.3	1	20		96	90-110				15	

MB	Sample ID: IC151210-1				Units: MG/L		Analysis Date: 12/10/2015 18:13				
Client ID:	Run ID: IC151210-1A5				Prep Date: 12/10/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
BROMIDE	ND	0.2									
CHLORIDE	ND	0.2									
FLUORIDE	ND	0.1									
NITRATE AS N	ND	0.2									
NITRITE AS N	ND	0.1									
SULFATE	ND	1									

The following samples were analyzed in this batch:

1512159-1

Client: Western Water and Land, Inc.
Work Order: 1512159
Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **PH151212-1-1** Instrument ID: **pH-1** Method: **SM4500-H**

CCV	Sample ID: CCV1				Units: pH			Analysis Date: 12/12/2015				
Client ID:	Run ID: ph151212-1a1				Prep Date: 12/12/2015			DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual	
PH	6.96	0.1	7			6.9-7.1						

CCV	Sample ID: CCV2				Units: pH			Analysis Date: 12/12/2015				
Client ID:	Run ID: ph151212-1a1				Prep Date: 12/12/2015			DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual	
PH	6.95	0.1	7			6.9-7.1						

ICV	Sample ID: ICV				Units: pH			Analysis Date: 12/12/2015				
Client ID:	Run ID: ph151212-1a1				Prep Date: 12/12/2015			DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual	
PH	7.01	0.1	7			6.95-7.05						

The following samples were analyzed in this batch:

1512159-1

Client: Western Water and Land, Inc.
Work Order: 1512159
Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **SC151212-1-1** Instrument ID: **pH-2** Method: **SM2510B**

CCV	Sample ID: CCV1			Units: umhos/cm			Analysis Date: 12/12/2015				
Client ID:	Run ID: SC151212-1A1			Prep Date: 12/12/2015			DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
SPECIFIC CONDUCTIVITY	1360	1	1410		96	71.7-1554					

ICV	Sample ID: ICV			Units: umhos/cm			Analysis Date: 12/12/2015				
Client ID:	Run ID: SC151212-1A1			Prep Date: 12/12/2015			DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
SPECIFIC CONDUCTIVITY	693	1	718		97	46.2-789.1					

The following samples were analyzed in this batch:

1512159-1

Client: Western Water and Land, Inc.
Work Order: 1512159
Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **TD151216-2-1** Instrument ID: **Balance** Method: **SM2540C**

LCS		Sample ID: TD151216-2			Units: MG/L		Analysis Date: 12/17/2015				
Client ID:		Run ID: TD151217-1A1			Prep Date: 12/16/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	403	20	400		101	85-115				5	

MB		Sample ID: TD151216-2				Units: MG/L		Analysis Date: 12/17/2015			
Client ID:		Run ID: TD151217-1A1				Prep Date: 12/16/2015				DF: 1	
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS		ND	20								

The following samples were analyzed in this batch:

1512159-1

Client: Western Water and Land, Inc.
Work Order: 1512159
Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **TP151228-1-2** Instrument ID: **Spec** Method: **EPA365.2**

LCS		Sample ID: TP151228-1			Units: MG/L			Analysis Date: 12/29/2015			
Client ID:		Run ID: TP151229-1A2			Prep Date: 12/28/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL PHOSPHORUS	0.507	0.05	0.5		101	80-120				20	

MB		Sample ID: TP151228-1			Units: MG/L			Analysis Date: 12/29/2015			
Client ID:		Run ID: TP151229-1A2			Prep Date: 12/28/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL PHOSPHORUS	ND	0.05									

The following samples were analyzed in this batch:

1512159-1



1512160

GC/MS Volatiles:

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

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.

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 2 prior to analysis.

All acceptance criteria were met.

Inorganics:

The sample was analyzed following EMSL and 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 ⁺ B	1126
Specific conductance	SM2510B	1128
Total phosphorus	365.2	1119
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
Total Nitrates	300.0 Revision 2.1	1113
Nitrite as N	300.0 Revision 2.1	1113
Sulfate	300.0 Revision 2.1	1113

All acceptance criteria were met.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1512160

Client Name: Western Water and Land, Inc.

Client Project Name: WPX RU 11-7 BWQ

Client Project Number:

Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Beaver Cr Up	1512160-1		WATER	09-Dec-15	14:00

Chain-of-Custody

Form 202r8

[illegible]



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: Western Water

Workorder No: 1512160

Project Manager: ARW

Initials: RLM

Date: 12/10/15

1. Does this project require any special handling in addition to standard ALS procedures?		YES	<u>NO</u>
2. Are custody seals on shipping containers intact?	NONE	<u>YES</u>	NO
3. Are Custody seals on sample containers intact?	<u>NONE</u>	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		<u>YES</u>	NO
5. Are the COC and bottle labels complete and legible?		<u>YES</u>	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		<u>YES</u>	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	<u>YES</u>	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	<u>YES</u>	NO
9. Are all aqueous non-preserved samples pH 4-9?	N/A	<u>YES</u>	NO
10. Is there sufficient sample for the requested analyses?		<u>YES</u>	NO
11. Were all samples placed in the proper containers for the requested analyses?		<u>YES</u>	NO
12. Are all samples within holding times for the requested analyses?		<u>YES</u>	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		<u>YES</u>	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea	N/A	<u>YES</u>	NO
15. Do any water samples contain sediment? Amount of sediment: ____ dusting ____ moderate ____ heavy	Amount N/A	YES	<u>NO</u>
16. Were the samples shipped on ice?		<u>YES</u>	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: <u>#2</u> #4	RAD ONLY	<u>YES</u>	NO
Cooler #: <u>1</u>			
Temperature (°C): <u>2.6</u>			
No. of custody seals on cooler: <u>1</u>			
External µR/hr reading: <u>11</u>			
Background µR/hr reading: <u>11</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? <u>YES</u> / NO / NA (If no, see Form 008.)			

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

If applicable, was the client contacted? YES / NO NA Contact: _____

Date/Time: _____

Project Manager Signature / Date: _____

*IR Gun #2: Oakton, SN 29922500201-0066

*IR Gun #4: Oakton, SN 2372220101-0002

ORIGIN ID: RLA (616) 298-1033
 NICK MARTINEZ
 ALS ENVIRONMENTAL
 127 E. 1ST STREET
 PARACHUTE, CO 81635
 UNITED STATES US

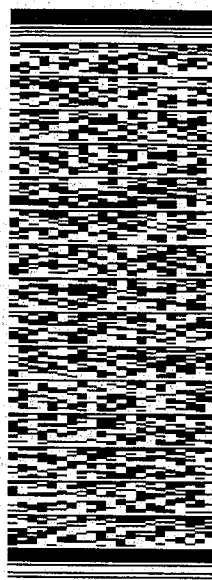
SHIP DATE: 09DEC15
 ACTWGT: 47.00 LB
 CAD: 108058167/NET 3670
 DIMS: 24x15x15 IN
 BILL RECIPIENT

TO **SAMPLE RECEIVING**
ALS LABORATORY GROUP
225 COMMERCE DRIVE

FORT COLLINS CO 80524
 (970) 490-1511
 INV. REF: 120915-1
 DEPT. PO. PARACHUTE

DEPT.

539J11/1308/31D0



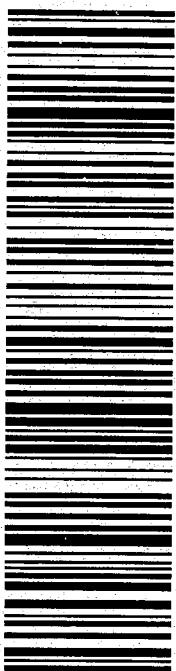
J153015091001uv

TRK# 7751 6602 8842
 0201

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72 FTCA

80524
 CO-US DEN



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ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: Western Water and Land, Inc.
Project: WPX RU 11-7 BWQ
Sample ID: Beaver Cr Up
Legal Location:
Collection Date: 12/9/2015 14:00

Date: 29-Dec-15
Work Order: 1512160
Lab ID: 1512160-1
Matrix: WATER

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	MDL	Date Analyzed
ALKALINITY AS CALCIUM CARBONATE							
			SM2320B		Prep Date: 12/22/2015		PrepBy: TLB
BICARBONATE AS CaCO3	170		20	MG/L	1		12/22/2015
CARBONATE AS CaCO3	ND		20	MG/L	1		12/22/2015
TOTAL ALKALINITY AS CaCO3	170		20	MG/L	1		12/22/2015
DIESEL RANGE ORGANICS							
			SW8015M		Prep Date: 12/16/2015		PrepBy: JFN
Diesel Range Organics	ND		0.57	MG/L	1	0.17	12/16/2015 18:08
Surr: O-TERPHENYL	102		63-126	%REC	1		12/16/2015 18:08
GC/MS VOLATILES							
			SW8260_25		Prep Date: 12/11/2015		PrepBy: JXK
BENZENE	ND		1	UG/L	1	0.3	12/11/2015 18:42
TOLUENE	ND		1	UG/L	1	0.3	12/11/2015 18:42
ETHYLBENZENE	ND		1	UG/L	1	0.3	12/11/2015 18:42
M+P-XYLENE	ND		1	UG/L	1	0.3	12/11/2015 18:42
O-XYLENE	ND		1	UG/L	1	0.3	12/11/2015 18:42
TOTAL XYLENES	ND		1	UG/L	1		12/11/2015 18:42
Surr: 4-BROMOFLUOROBENZENE	110		85-115	%REC	1		12/11/2015 18:42
Surr: DIBROMOFLUOROMETHANE	99		84-118	%REC	1		12/11/2015 18:42
Surr: TOLUENE-D8	99		85-115	%REC	1		12/11/2015 18:42
GASOLINE RANGE ORGANICS	ND		100	UG/L	1	100	12/11/2015 18:42
ION CHROMATOGRAPHY							
			EPA300.0		Prep Date: 12/10/2015		PrepBy: DRH
BROMIDE	ND		0.2	MG/L	1	0.06	12/10/2015 19:44
CHLORIDE	1.5		0.2	MG/L	1	0.06	12/10/2015 19:44
FLUORIDE	0.061	J	0.1	MG/L	1	0.03	12/10/2015 19:44
NITRATE/NITRITE AS N	0.31		0.1	MG/L	1		12/10/2015 19:44
NITRATE AS N	0.31		0.2	MG/L	1	0.06	12/10/2015 19:44
NITRITE AS N	ND		0.1	MG/L	1	0.03	12/10/2015 19:44
SULFATE	18		1	MG/L	1	0.3	12/10/2015 19:44
METALS BY 200.8							
			EPA200.8		Prep Date: 12/15/2015		PrepBy: CDR
BARIUM	0.056		0.001	MG/L	10	0.00058	12/16/2015 22:44
BORON	0.027	J	0.05	MG/L	10	0.0069	12/16/2015 22:44
CALCIUM	48		1	MG/L	10	0.1	12/16/2015 22:44
IRON	0.025	J	0.1	MG/L	10	0.025	12/16/2015 22:44
MAGNESIUM	11		0.1	MG/L	10	0.045	12/16/2015 22:44
MANGANESE	0.0014	J	0.002	MG/L	10	0.0007	12/16/2015 22:44
POTASSIUM	0.59	J	1	MG/L	10	0.22	12/16/2015 22:44
SELENIUM	ND		0.001	MG/L	10	0.00068	12/16/2015 22:44
SODIUM	15		1	MG/L	10	0.24	12/16/2015 22:44
STRONTIUM	0.35		0.001	MG/L	10	0.00066	12/16/2015 22:44
PH							
			SM4500-H		Prep Date: 12/12/2015		PrepBy: TLB
PH	8.23		0.1	pH	1		12/12/2015
SPECIFIC CONDUCTANCE IN WATER							
			SM2510B		Prep Date: 12/12/2015		PrepBy: TLB
SPECIFIC CONDUCTIVITY	337		1	umhos/cm	1		12/12/2015

ALS Environmental -- FC**SAMPLE SUMMARY REPORT****Client:** Western Water and Land, Inc.**Date:** 29-Dec-15**Project:** WPX RU 11-7 BWQ**Work Order:** 1512160**Sample ID:** Beaver Cr Up**Lab ID:** 1512160-1**Legal Location:****Matrix:** WATER**Collection Date:** 12/9/2015 14:00**Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	MDL	Date Analyzed
TOTAL DISSOLVED SOLIDS			SM2540C				
TOTAL DISSOLVED SOLIDS	210		20	MG/L	1		
					Prep Date: 12/16/2015	PrepBy: TLB	12/17/2015

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: Western Water and Land, Inc.
Project: WPX RU 11-7 BWQ
Sample ID: Beaver Cr Up
Legal Location:
Collection Date: 12/9/2015 14:00

Date: 29-Dec-15
Work Order: 1512160
Lab ID: 1512160-1
Matrix: WATER
Percent Moisture:

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

Radiochemistry:

U or ND - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.
- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.
G - Sample density differs by more than 15% of LCS density.
D - DER is greater than Control Limit
M - Requested MDC not met.
LT - Result is less than requested MDC but greater than achieved MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits
NC - Not Calculated for duplicate results less than 5 times MDC
B - Analyte concentration greater than MDC.
B3 - Analyte concentration greater than MDC but less than Requested 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.
S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

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.
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

ALS Environmental -- FC

Date: 12/29/2015 12:5

Client: Western Water and Land, Inc.

Work Order: 1512160

Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **HC151216-100-1** Instrument ID: **FUELS-1** Method: **SW8015M**

LCS	Sample ID: HC151216-100			Units: MG/L			Analysis Date: 12/16/2015 16:36					
Client ID:	Run ID: HC151216-7A			Prep Date: 12/16/2015			DF: 1					
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual	
Diesel Range Organics	8.36	0.576	8		105	36-150				20		
Surr: O-TERPHENYL	0.824		0.8		103	63-126						

MB	Sample ID: HC151216-100			Units: MG/L			Analysis Date: 12/16/2015 15:34					
Client ID:	Run ID: HC151216-7A			Prep Date: 12/16/2015			DF: 1					
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual	
Diesel Range Organics	ND	0.58										
Surr: O-TERPHENYL	0.818		0.802		102	63-126						

The following samples were analyzed in this batch:

1512160-1

Client: Western Water and Land, Inc.
 Work Order: 1512160
 Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **IP151215-1-2** Instrument ID: **ICPMS2** Method: **EPA200.8**

LCS	Sample ID: FM151215-1				Units: MG/L		Analysis Date: 12/16/2015 22:37				
Client ID:	Run ID: IM151216-10A2				Prep Date: 12/15/2015			DF: 10			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
BARIUM	0.105	0.001	0.1		105	85-115				20	
BORON	0.974	0.05	1		97	85-115				20	
CALCIUM	10.7	1	10		107	85-115				20	
IRON	4.98	0.1	5		100	85-115				20	
MAGNESIUM	9.97	0.1	10		100	85-115				20	
MANGANESE	0.103	0.002	0.1		103	85-115				20	
POTASSIUM	4.61	1	5		92	85-115				20	
SELENIUM	0.105	0.001	0.1		105	85-115				20	
SODIUM	10.1	1	10		101	85-115				20	
STRONTIUM	0.11	0.001	0.1		110	85-115				20	

MB	Sample ID: FP151215-1				Units: MG/L		Analysis Date: 12/16/2015 22:30				
Client ID:	Run ID: IM151216-10A2				Prep Date: 12/15/2015			DF: 10			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
BARIUM	ND	0.001									
BORON	0.01	0.05									J
CALCIUM	ND	1									
IRON	ND	0.1									
MAGNESIUM	ND	0.1									
MANGANESE	ND	0.002									
POTASSIUM	ND	1									
SELENIUM	ND	0.001									
SODIUM	ND	1									
STRONTIUM	0.00081	0.001									J

The following samples were analyzed in this batch:

1512160-1

Client: Western Water and Land, Inc.
 Work Order: 1512160
 Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **VL151211-3-1** Instrument ID: **HPV1** Method: **SW8260_25**

LCS		Sample ID: VL151211-3			Units: %REC		Analysis Date: 12/11/2015 12:36				
Client ID:		Run ID: VL151211-3A			Prep Date: 12/11/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	26.2		25		105	85-115					
Surr: DIBROMOFLUOROMETHANE	24.7		25		99	84-118					
Surr: TOLUENE-D8	24.7		25		99	85-115					
BENZENE	11	1	10		110	83-117				20	
TOLUENE	10.6	1	10		106	82-113				20	
ETHYLBENZENE	10.1	1	10		101	81-113				20	
M+P-XYLENE	19.7	1	20		98	82-115				20	
O-XYLENE	9.8	1	10		98	81-115				20	

LCSD		Sample ID: VL151211-3			Units: %REC		Analysis Date: 12/11/2015 12:58				
Client ID:		Run ID: VL151211-3A			Prep Date: 12/11/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	26.1		25		105	85-115			0		
Surr: DIBROMOFLUOROMETHANE	24.5		25		98	84-118			1		
Surr: TOLUENE-D8	24.6		25		98	85-115			1		
BENZENE	10.6	1	10		106	83-117		11	4	20	
TOLUENE	10.2	1	10		102	82-113		10.6	4	20	
ETHYLBENZENE	9.91	1	10		99	81-113		10.1	2	20	
M+P-XYLENE	19.1	1	20		95	82-115		19.7	3	20	
O-XYLENE	9.62	1	10		96	81-115		9.8	2	20	

MB		Sample ID: VL151211-3			Units: %REC		Analysis Date: 12/11/2015 15:09				
Client ID:		Run ID: VL151211-3A			Prep Date: 12/11/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	28.1		25		113	85-115					
Surr: DIBROMOFLUOROMETHANE	24.7		25		99	84-118					
Surr: TOLUENE-D8	25.4		25		102	85-115					
BENZENE	ND	1									
TOLUENE	ND	1									
ETHYLBENZENE	ND	1									
M+P-XYLENE	ND	1									
O-XYLENE	ND	1									
TOTAL XYLENES	ND	1									

Client: Western Water and Land, Inc.
Work Order: 1512160
Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **VL151211-3-2** Instrument ID: **HPV1** Method: **SW8260_25**

LCS		Sample ID: VL151211-6				Units: UG/L		Analysis Date: 12/11/2015 14:05			
Client ID:		Run ID: VL151211-3A				Prep Date: 12/11/2015		DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	904	100	1000		90	80-120				20	

LCSD		Sample ID: VL151211-6				Units: UG/L		Analysis Date: 12/11/2015 14:26			
Client ID:		Run ID: VL151211-3A				Prep Date: 12/11/2015		DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	864	100	1000		86	80-120		904	5	20	

MB		Sample ID: VL151211-3				Units: UG/L		Analysis Date: 12/11/2015 15:09			
Client ID:		Run ID: VL151211-3A						Prep Date: 12/11/2015		DF: 1	
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS		ND	100								

The following samples were analyzed in this batch:

1512160-1

Client: Western Water and Land, Inc.
Work Order: 1512160
Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **AK151222-1-2** Instrument ID: **Balance** Method: **SM2320B**

LCS		Sample ID: AK151222-1				Units: MG/L		Analysis Date: 12/22/2015			
Client ID:		Run ID: AK151222-1A1				Prep Date: 12/22/2015		DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL ALKALINITY AS CaCO3	96.7	5	100		97	85-115				15	

MB		Sample ID: AK151222-1				Units: MG/L		Analysis Date: 12/22/2015			
Client ID:		Run ID: AK151222-1A1				Prep Date: 12/22/2015				DF: 1	
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	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:

1512160-1

Client: Western Water and Land, Inc.
Work Order: 1512160
Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **IC151210-1-3** Instrument ID: **IC-2** Method: **EPA300.0**

LCS		Sample ID: IC151210-1			Units: MG/L		Analysis Date: 12/10/2015 17:58				
Client ID:		Run ID: IC151210-1A5					Prep Date: 12/10/2015		DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
BROMIDE	4.76	0.2	5		95	90-110				15	
CHLORIDE	4.87	0.2	5		97	90-110				15	
FLUORIDE	1.92	0.1	2		96	90-110				15	
NITRATE AS N	4.83	0.2	5		97	90-110				15	
NITRITE AS N	1.87	0.1	2		94	90-110				15	
SULFATE	19.3	1	20		96	90-110				15	

MB	Sample ID: IC151210-1				Units: MG/L		Analysis Date: 12/10/2015 18:13				
Client ID:	Run ID: IC151210-1A5				Prep Date: 12/10/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
BROMIDE	ND	0.2									
CHLORIDE	ND	0.2									
FLUORIDE	ND	0.1									
NITRATE AS N	ND	0.2									
NITRITE AS N	ND	0.1									
SULFATE	ND	1									

The following samples were analyzed in this batch:

1512160-1

Client: Western Water and Land, Inc.
Work Order: 1512160
Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **PH151212-1-1** Instrument ID: **pH-1** Method: **SM4500-H**

CCV		Sample ID: CCV1			Units: pH			Analysis Date: 12/12/2015				
Client ID:		Run ID: ph151212-1a1			Prep Date: 12/12/2015			DF: 1				
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
PH		6.96	0.1	7			6.9-7.1					

CCV		Sample ID: CCV2			Units: pH			Analysis Date: 12/12/2015				
Client ID:		Run ID: ph151212-1a1			Prep Date: 12/12/2015			DF: 1				
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
PH		6.95	0.1	7			6.9-7.1					

ICV		Sample ID: ICV			Units: pH			Analysis Date: 12/12/2015				
Client ID:		Run ID: ph151212-1a1			Prep Date: 12/12/2015			DF: 1				
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
PH		7.01	0.1	7			6.95-7.05					

The following samples were analyzed in this batch:

1512160-1

Client: Western Water and Land, Inc.
Work Order: 1512160
Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **SC151212-1-1** Instrument ID: **pH-2** Method: **SM2510B**

CCV	Sample ID: CCV1			Units: umhos/cm			Analysis Date: 12/12/2015				
Client ID:	Run ID: SC151212-1A1			Prep Date: 12/12/2015			DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
SPECIFIC CONDUCTIVITY	1360	1	1410		96	71.7-1554					

ICV	Sample ID: ICV			Units: umhos/cm			Analysis Date: 12/12/2015				
Client ID:	Run ID: SC151212-1A1			Prep Date: 12/12/2015			DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
SPECIFIC CONDUCTIVITY	693	1	718		97	46.2-789.1					

The following samples were analyzed in this batch:

1512160-1

Client: Western Water and Land, Inc.
Work Order: 1512160
Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **TD151216-2-1** Instrument ID: **Balance** Method: **SM2540C**

LCS		Sample ID: TD151216-2			Units: MG/L			Analysis Date: 12/17/2015			
Client ID:		Run ID: TD151217-1A1			Prep Date: 12/16/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	403	20	400		101	85-115				5	

MB		Sample ID: TD151216-2			Units: MG/L			Analysis Date: 12/17/2015			
Client ID:		Run ID: TD151217-1A1			Prep Date: 12/16/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	ND	20									

The following samples were analyzed in this batch:

1512160-1



1512161

GC/MS Volatiles:

The sample was analyzed using GC/MS following the current revision of SOP 525 based on SW-846 Method 8260C. The sample was 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.

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 2 prior to analysis.

All acceptance criteria were met.

Inorganics:

The sample was analyzed following MCAWW, EMSL and 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 ⁺ B	1126
Specific conductance	SM2510B	1128
Total phosphorus	365.2	1119
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
Total Nitrates	300.0 Revision 2.1	1113
Nitrite as N	300.0 Revision 2.1	1113
Sulfate	300.0 Revision 2.1	1113

All acceptance criteria were met.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1512161

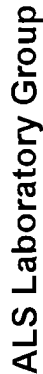
Client Name: Western Water and Land, Inc.

Client Project Name: WPX RU 11-7 BWQ

Client Project Number:

Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Yellow Jacket Spg	1512161-1		WATER	09-Dec-15	12:40



2225 Commerce Drive, Fort Collins, Colorado 80524
 TEL: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-

Chain-of-Custody

Form 202r8

ALS Laboratory Group 225 Commerce Drive, Fort Collins, Colorado 80524 TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522						Chain-of-Custody Form 202r8											
PROJECT NAME WV 11-7 BWA						SAMPLER Nick Solaymetz						WORKORDER # 1512161					
FACILITY NAME						PROJECT NO.						DATE 12-9-15					
FACILITY ID (API)						EDD FORMAT						TURNAROUND Standard					
COMPANY NAME Western Water & Land, Inc.						PURCHASE ORDER						DISPOSAL					
SEND REPORT TO Bruce Smith						BILL TO COMPANY WPX Energy						PAGE of					
ADDRESS 743 Horizon Court, Suite 330						INVOICE ATTN TO Mike Shoemaker						Return to Client					
CITY / STATE / ZIP Grand Junction, CO 81506						ADDRESS 1058 CR 215											
PHONE (970) 242-0170						CITY / STATE / ZIP Parachute, CO 81635											
FAX						PHONE (970) 250-5778											
E-MAIL bsmith@westernwaterandland.com						E-MAIL mike.shoemaker@wpxenergy.com											
Lab ID ①						Field ID Yellow Jacket Spg						Matrix GW					
Temp (°C) 4.51						DO (%) 22.9						SpC (uS/cm) 733					
pH (s.u.) 6.95						DO (mg/L) 2.93						ORP (mv) -422					
Temp (°C)						DO (%)						SpC (uS/cm)					
pH (s.u.)						DO (mg/L)						ORP (mv)					
Time Zone (Circle): EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter						Field Parameters											
Comments: For metals or anions, please detail analytes below.						QC PACKAGE (check below) LEVEL II (Standard QC) LEVEL III (Std QC + forms) LEVEL IV (Std QC + forms + raw data)						SIGNATURE Shelly BPP M. J. W. Mariani Rebecca Presk					
RELINQUISHED BY						RECEIVED BY						DATE 12-9-15 11:00					
RELINQUISHED BY						RECEIVED BY						DATE 12-9-15 16:00					
RELINQUISHED BY						RECEIVED BY						DATE 12-9-15 16:30					
RELINQUISHED BY						RECEIVED BY						DATE 12-12-15 09:40					
Preservative Key:						1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035											



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: Western Water

Workorder No: 1512161

Project Manager: ARW

Initials: RM

Date: 12/10/15

1. Does this project require any special handling in addition to standard ALS procedures?		YES	<u>NO</u>
2. Are custody seals on shipping containers intact?	NONE	<u>YES</u>	NO
3. Are Custody seals on sample containers intact?	NONE	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		<u>YES</u>	NO
5. Are the COC and bottle labels complete and legible?		<u>YES</u>	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		<u>YES</u>	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	<u>YES</u>	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	<u>YES</u>	NO
9. Are all aqueous non-preserved samples pH 4-9?	N/A	<u>YES</u>	NO
10. Is there sufficient sample for the requested analyses?		<u>YES</u>	NO
11. Were all samples placed in the proper containers for the requested analyses?		<u>YES</u>	NO
12. Are all samples within holding times for the requested analyses?		<u>YES</u>	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		<u>YES</u>	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea	N/A	<u>YES</u>	NO
15. Do any water samples contain sediment? Amount of sediment: ____ dusting ____ moderate ____ heavy	Amount N/A	YES	<u>NO</u>
16. Were the samples shipped on ice?		<u>YES</u>	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: <u>#2</u> #4	RAD ONLY	<u>YES</u>	NO
Cooler #: <u>1</u>			
Temperature (°C): <u>2.6</u>			
No. of custody seals on cooler: <u>1</u>			
DOT Survey/ Acceptance Information	External µR/hr reading: <u>11</u>		
	Background µR/hr reading: <u>11</u>		
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? <u>YES</u> / NO / NA (If no, see Form 008.)			

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

If applicable, was the client contacted? YES / NO / NA Contact: _____

Date/Time: _____

Project Manager Signature / Date: _____

*IR Gun #2: Oakton, SN 29922500201-0066

*IR Gun #4: Oakton, SN 2372220101-0002

ORIGIN ID:RLA (616) 298-1033
 NICK MARTINEZ
 ALS ENVIRONMENTAL
 127 E. 1ST STREET
 PARACHUTE CO 81635
 UNITED STATES US

SHIP DATE: 09DEC15
 ACTWGT: 47.00 LB
 CAD: 108058167/NET3670
 DIMS: 24x15x15 IN
 BILL RECIPIENT

TO SAMPLE RECEIVING

ALS LABORATORY GROUP
 225 COMMERCE DRIVE

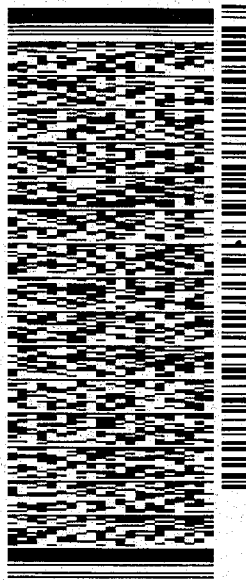
FORT COLLINS CO 80524

(970) 490-1511

REF: 120915-1

PO: PARACHUTE

DEPT:



J153015091001uv

THU - 10 DEC 3:00P

STANDARD OVERNIGHT

TRK# 7751 6602 8842
 0201

72 FTCA

80524
 CO-US DEN



11
 1
 539J1/1308/31D0
 2.60C

1512161

After printing this label:

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: Western Water and Land, Inc.

Date: 31-Dec-15

Project: WPX RU 11-7 BWQ

Work Order: 1512161

Sample ID: Yellow Jacket Spg

Lab ID: 1512161-1

Legal Location:

Matrix: WATER

Collection Date: 12/9/2015 12:40

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Alkalinity as Calcium Carbonate			SM2320B		Prep Date: 12/22/2015	PrepBy: TLB
BICARBONATE AS CaCO3	310		20	MG/L	1	12/22/2015
CARBONATE AS CaCO3	ND		20	MG/L	1	12/22/2015
TOTAL ALKALINITY AS CaCO3	310		20	MG/L	1	12/22/2015
Diesel Range Organics			SW8015M		Prep Date: 12/16/2015	PrepBy: JFN
Diesel Range Organics	ND		0.57	MG/L	1	12/16/2015 18:39
Surr: O-TERPHENYL	106		63-126	%REC	1	12/16/2015 18:39
Dissolved Gasses			RSK175		Prep Date: 12/21/2015	PrepBy: JFN
METHANE	ND		1	UG/L	1	12/21/2015 13:32
ETHANE	ND		2	UG/L	1	12/21/2015 13:32
PROPANE	ND		1	UG/L	1	12/21/2015 13:32
GC/MS Volatiles			SW8260_25		Prep Date: 12/11/2015	PrepBy: JXK
BENZENE	ND		1	UG/L	1	12/11/2015 19:04
TOLUENE	0.55	J	1	UG/L	1	12/11/2015 19:04
ETHYLBENZENE	ND		1	UG/L	1	12/11/2015 19:04
M+P-XYLENE	ND		1	UG/L	1	12/11/2015 19:04
O-XYLENE	ND		1	UG/L	1	12/11/2015 19:04
TOTAL XYLENES	ND		1	UG/L	1	12/11/2015 19:04
Surr: 4-BROMOFLUOROBENZENE	111		85-115	%REC	1	12/11/2015 19:04
Surr: DIBROMOFLUOROMETHANE	98		84-118	%REC	1	12/11/2015 19:04
Surr: TOLUENE-D8	98		85-115	%REC	1	12/11/2015 19:04
GASOLINE RANGE ORGANICS	ND		100	UG/L	1	12/11/2015 19:04
Ion Chromatography			EPA300.0		Prep Date: 12/10/2015	PrepBy: DRH
BROMIDE	0.28		0.2	MG/L	1	12/10/2015 20:14
CHLORIDE	54		1	MG/L	5	12/23/2015 16:03
FLUORIDE	0.16		0.1	MG/L	1	12/10/2015 20:14
NITRATE/NITRITE AS N	ND		0.1	MG/L	1	12/10/2015 20:14
NITRATE AS N	ND		0.2	MG/L	1	12/10/2015 20:14
NITRITE AS N	ND		0.1	MG/L	1	12/10/2015 20:14
SULFATE	13		1	MG/L	1	12/10/2015 20:14
Dissolved Metals by 200.8			EPA200.8		Prep Date: 12/15/2015	PrepBy: CDR
BARIUM	0.14		0.001	MG/L	10	12/16/2015 22:48
BORON	0.025	J	0.05	MG/L	10	12/16/2015 22:48
CALCIUM	97		1	MG/L	10	12/16/2015 22:48
IRON	0.032	J	0.1	MG/L	10	12/16/2015 22:48
MAGNESIUM	19		0.1	MG/L	10	12/16/2015 22:48
MANGANESE	0.54		0.002	MG/L	10	12/16/2015 22:48
POTASSIUM	1.5		1	MG/L	10	12/16/2015 22:48
SELENIUM	ND		0.001	MG/L	10	12/16/2015 22:48
SODIUM	13		1	MG/L	10	12/16/2015 22:48
STRONTIUM	0.53		0.001	MG/L	10	12/16/2015 22:48
pH			SM4500-H		Prep Date: 12/12/2015	PrepBy: TLB
PH	7.29		0.1	pH	1	12/12/2015
Specific Conductance in Water			SM2510B		Prep Date: 12/12/2015	PrepBy: TLB

Client: Western Water and Land, Inc.

Date: 31-Dec-15

Project: WPX RU 11-7 BWQ

Work Order: 1512161

Sample ID: Yellow Jacket Spg

Lab ID: 1512161-1

Legal Location:

Matrix: WATER

Collection Date: 12/9/2015 12:40

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
SPECIFIC CONDUCTIVITY	670		1	umhos/cm	1	12/12/2015
Total Dissolved Solids		SM2540C				Prep Date: 12/16/2015 PrepBy: TLB
TOTAL DISSOLVED SOLIDS	410		20	MG/L	1	12/17/2015
Total Phosphorus as P		EPA365.2				Prep Date: 12/28/2015 PrepBy: TLB
TOTAL PHOSPHORUS	0.2		0.05	MG/L	1	12/29/2015

Client: Western Water and Land, Inc.

Date: 31-Dec-15

Project: WPX RU 11-7 BWQ

Work Order: 1512161

Sample ID: Yellow Jacket Spg

Lab ID: 1512161-1

Legal Location:

Matrix: WATER

Collection Date: 12/9/2015 12:40

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.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.

G - Sample density differs by more than 15% of LCS density.

D - DER is greater than Control Limit

M - Requested MDC not met.

LT - Result is less than requested MDC but greater than achieved MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested 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.

S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

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.

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

ALS Environmental -- FC

Date: 12/31/2015 3:51

Client: Western Water and Land, Inc.

Work Order: 1512161

Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: HC151216-100-1 Instrument ID FUELS-1 Method: SW8015M

LCS	Sample ID: HC151216-100			Units: MG/L		Analysis Date: 12/16/2015 16:36					
Client ID:		Run ID: HC151216-7A			Prep Date: 12/16/2015				DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Diesel Range Organics	8.36	0.576	8		105	36-150				20	
Surr: O-TERPHENYL	0.824		0.8		103	63-126					

MB	Sample ID: HC151216-100				Units: MG/L		Analysis Date: 12/16/2015 15:34				
Client ID:		Run ID: HC151216-7A				Prep Date: 12/16/2015			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Diesel Range Organics	ND	0.58									
Surr: O-TERPHENYL	0.818		0.802		102	63-126					

The following samples were analyzed in this batch:

1512161-1

Client: Western Water and Land, Inc.
Work Order: 1512161
Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **HC151221-9-2** Instrument ID **MEE-1** Method: **RSK175**

LCS	Sample ID: HC151221-9			Units: UG/L			Analysis Date: 12/21/2015 12:38				
Client ID:	Run ID: HC151221-9A			Prep Date: 12/21/2015			DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
METHANE	147	1	142		103	80-120				25	
ETHANE	276	2	267		104	80-120				25	
PROPANE	396	1	391		101	80-120				25	

LCSD	Sample ID: HC151221-9			Units: UG/L			Analysis Date: 12/21/2015 13:24				
Client ID:	Run ID: HC151221-9A			Prep Date: 12/21/2015			DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
METHANE	154	1	142		108	80-120		147	4	25	
ETHANE	291	2	267		109	80-120		276	5	25	
PROPANE	417	1	391		107	80-120		396	5	25	

MB		Sample ID: HC151221-9				Units: UG/L		Analysis Date: 12/21/2015 12:42			
Client ID:		Run ID: HC151221-9A				Prep Date: 12/21/2015			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
METHANE	ND	1									
ETHANE	ND	2									
PROPANE	ND	1									

The following samples were analyzed in this batch:

1512161-1

Client: Western Water and Land, Inc.
Work Order: 1512161
Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **IP151215-1-2** Instrument ID **ICPMS2** Method: **EPA200.8**

LCS		Sample ID: FM151215-1			Units: MG/L		Analysis Date: 12/16/2015 22:37				
Client ID:		Run ID: IM151216-10A2			Prep Date: 12/15/2015			DF: 10			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
BARIUM	0.105	0.001	0.1		105	85-115				20	
BORON	0.974	0.05	1		97	85-115				20	
CALCIUM	10.7	1	10		107	85-115				20	
IRON	4.98	0.1	5		100	85-115				20	
MAGNESIUM	9.97	0.1	10		100	85-115				20	
MANGANESE	0.103	0.002	0.1		103	85-115				20	
POTASSIUM	4.61	1	5		92	85-115				20	
SELENIUM	0.105	0.001	0.1		105	85-115				20	
SODIUM	10.1	1	10		101	85-115				20	
STRONTIUM	0.11	0.001	0.1		110	85-115				20	

MB		Sample ID: FP151215-1			Units: MG/L			Analysis Date: 12/16/2015 22:30			
Client ID:		Run ID: IM151216-10A2			Prep Date: 12/15/2015			DF: 10			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
BARIUM	ND	0.001									
BORON	0.01	0.05									J
CALCIUM	ND	1									
IRON	ND	0.1									
MAGNESIUM	ND	0.1									
MANGANESE	ND	0.002									
POTASSIUM	ND	1									
SELENIUM	ND	0.001									
SODIUM	ND	1									
STRONTIUM	0.00081	0.001									J

The following samples were analyzed in this batch:

1512161-1

Client: Western Water and Land, Inc.
 Work Order: 1512161
 Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **VL151211-3-1** Instrument ID **HPV1** Method: **SW8260_25**

LCS		Sample ID: VL151211-3			Units: %REC		Analysis Date: 12/11/2015 12:36				
Client ID:		Run ID: VL151211-3A			Prep Date: 12/11/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	26.2		25		105	85-115					
Surr: DIBROMOFLUOROMETHANE	24.7		25		99	84-118					
Surr: TOLUENE-D8	24.7		25		99	85-115					
BENZENE	11	1	10		110	83-117				20	
TOLUENE	10.6	1	10		106	82-113				20	
ETHYLBENZENE	10.1	1	10		101	81-113				20	
M+P-XYLENE	19.7	1	20		98	82-115				20	
O-XYLENE	9.8	1	10		98	81-115				20	

LCSD		Sample ID: VL151211-3			Units: %REC		Analysis Date: 12/11/2015 12:58				
Client ID:		Run ID: VL151211-3A			Prep Date: 12/11/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	26.1		25		105	85-115			0		
Surr: DIBROMOFLUOROMETHANE	24.5		25		98	84-118			1		
Surr: TOLUENE-D8	24.6		25		98	85-115			1		
BENZENE	10.6	1	10		106	83-117		11	4	20	
TOLUENE	10.2	1	10		102	82-113		10.6	4	20	
ETHYLBENZENE	9.91	1	10		99	81-113		10.1	2	20	
M+P-XYLENE	19.1	1	20		95	82-115		19.7	3	20	
O-XYLENE	9.62	1	10		96	81-115		9.8	2	20	

MB		Sample ID: VL151211-3			Units: %REC		Analysis Date: 12/11/2015 15:09				
Client ID:		Run ID: VL151211-3A			Prep Date: 12/11/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	28.1		25		113	85-115					
Surr: DIBROMOFLUOROMETHANE	24.7		25		99	84-118					
Surr: TOLUENE-D8	25.4		25		102	85-115					
BENZENE	ND	1									
TOLUENE	ND	1									
ETHYLBENZENE	ND	1									
M+P-XYLENE	ND	1									
O-XYLENE	ND	1									
TOTAL XYLENES	ND	1									

Client: Western Water and Land, Inc.
Work Order: 1512161
Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **VL151211-3-2** Instrument ID **HPV1** Method: **SW8260_25**

LCS		Sample ID: VL151211-6				Units: UG/L		Analysis Date: 12/11/2015 14:05			
Client ID:		Run ID: VL151211-3A				Prep Date: 12/11/2015			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS		904	100	1000	90	80-120				20	

LCSD	Sample ID: VL151211-6			Units: UG/L			Analysis Date: 12/11/2015 14:26				
Client ID:	Run ID: VL151211-3A						Prep Date: 12/11/2015		DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	864	100	1000		86	80-120		904	5	20	

MB		Sample ID: VL151211-3				Units: UG/L		Analysis Date: 12/11/2015 15:09			
Client ID:		Run ID: VL151211-3A						Prep Date: 12/11/2015		DF: 1	
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS		ND	100								

The following samples were analyzed in this batch:

1512161-1

Client: Western Water and Land, Inc.
Work Order: 1512161
Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **AK151222-1-2** Instrument ID **Balance** Method: **SM2320B**

LCS		Sample ID: AK151222-1		Units: MG/L			Analysis Date: 12/22/2015				
Client ID:		Run ID: AK151222-1A1				Prep Date: 12/22/2015			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL ALKALINITY AS CaCO3	96.7	5	100		97	85-115				15	

MB		Sample ID: AK151222-1		Units: MG/L			Analysis Date: 12/22/2015				
Client ID:		Run ID: AK151222-1A1				Prep Date: 12/22/2015			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	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:

1512161-1

Client: Western Water and Land, Inc.
Work Order: 1512161
Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **IC151210-1-3** Instrument ID **IC-2** Method: **EPA300.0**

LCS		Sample ID: IC151210-1			Units: MG/L		Analysis Date: 12/10/2015 17:58				
Client ID:		Run ID: IC151210-1A5					Prep Date: 12/10/2015		DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
BROMIDE	4.76	0.2	5		95	90-110				15	
CHLORIDE	4.87	0.2	5		97	90-110				15	
FLUORIDE	1.92	0.1	2		96	90-110				15	
NITRATE AS N	4.83	0.2	5		97	90-110				15	
NITRITE AS N	1.87	0.1	2		94	90-110				15	
SULFATE	19.3	1	20		96	90-110				15	

MB		Sample ID: IC151210-1				Units: MG/L		Analysis Date: 12/10/2015 18:13			
Client ID:		Run ID: IC151210-1A5				Prep Date: 12/10/2015			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
BROMIDE	ND	0.2									
CHLORIDE	ND	0.2									
FLUORIDE	ND	0.1									
NITRATE AS N	ND	0.2									
NITRITE AS N	ND	0.1									
SULFATE	ND	1									

The following samples were analyzed in this batch:

1512161-1

Client: Western Water and Land, Inc.
Work Order: 1512161
Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **PH151212-1-1** Instrument ID **pH-1** Method: **SM4500-H**

CCV		Sample ID: CCV1			Units: pH			Analysis Date: 12/12/2015			
Client ID:		Run ID: ph151212-1a1			Prep Date: 12/12/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
PH	6.96	0.1	7			6.9-7.1					

CCV		Sample ID: CCV2			Units: pH			Analysis Date: 12/12/2015			
Client ID:		Run ID: ph151212-1a1			Prep Date: 12/12/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
PH	6.95	0.1	7			6.9-7.1					

ICV		Sample ID: ICV			Units: pH			Analysis Date: 12/12/2015			
Client ID:		Run ID: ph151212-1a1			Prep Date: 12/12/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
PH	7.01	0.1	7			6.95-7.05					

The following samples were analyzed in this batch:

1512161-1

Client: Western Water and Land, Inc.
Work Order: 1512161
Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **SC151212-1-1** Instrument ID **pH-2** Method: **SM2510B**

CCV		Sample ID: CCV1		Units: umhos/cm			Analysis Date: 12/12/2015				
Client ID:		Run ID: SC151212-1A1				Prep Date: 12/12/2015			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
SPECIFIC CONDUCTIVITY	1360	1	1410		96	71.7-1554					

ICV		Sample ID: ICV		Units: umhos/cm			Analysis Date: 12/12/2015				
Client ID:		Run ID: SC151212-1A1				Prep Date: 12/12/2015			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
SPECIFIC CONDUCTIVITY	693	1	718		97	46.2-789.1					

The following samples were analyzed in this batch:

1512161-1

Client: Western Water and Land, Inc.
Work Order: 1512161
Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **TD151216-2-1** Instrument ID **Balance** Method: **SM2540C**

LCS		Sample ID: TD151216-2		Units: MG/L			Analysis Date: 12/17/2015				
Client ID:		Run ID: TD151217-1A1				Prep Date: 12/16/2015			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	403	20	400		101	85-115				5	

MB		Sample ID: TD151216-2		Units: MG/L			Analysis Date: 12/17/2015				
Client ID:		Run ID: TD151217-1A1				Prep Date: 12/16/2015			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	ND	20									

The following samples were analyzed in this batch:

1512161-1

Client: Western Water and Land, Inc.
Work Order: 1512161
Project: WPX RU 11-7 BWQ

QC BATCH REPORT

Batch ID: **TP151228-1-2** Instrument ID **Spec** Method: **EPA365.2**

LCS		Sample ID: TP151228-1			Units: MG/L			Analysis Date: 12/29/2015			
Client ID:		Run ID: TP151229-1A2			Prep Date: 12/28/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL PHOSPHORUS	0.507	0.05	0.5		101	80-120				20	

MB		Sample ID: TP151228-1			Units: MG/L			Analysis Date: 12/29/2015			
Client ID:		Run ID: TP151229-1A2			Prep Date: 12/28/2015			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL PHOSPHORUS	ND	0.05									

The following samples were analyzed in this batch:

1512161-1

Thursday, February 11, 2016

Bruce Smith
Western Water and Land, Inc.
743 Horizon Ct., Suite 330
Grand Junction, CO 81506

Re: ALS Workorder: 1601317
Project Name: WPX BWQ: RU 11-7
Project Number:

Dear Mr. Smith:

One water sample was received from Western Water and Land, Inc., on 1/28/2016. The sample was scheduled for the following analysis:

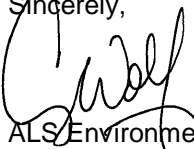
BART

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,



ALS Environmental
Amy R. Wolf
Project Manager

ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environmental – Fort Collins	
Accreditation Body	License or Certification Number
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New Jersey (NJ)	CO003
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280



1601317

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. If the target analyte is detected (present), then the sample will be reported with the estimated colony forming units/mL (cfu/mL) as provided by the manufacturer based on the day reaction was observed.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1601317

Client Name: Western Water and Land, Inc.

Client Project Name: WPX BWQ: RU 11-7

Client Project Number:

Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Yellow Jacket Spg	1601317-1		WATER	27-Jan-16	9:45



Customer Information				Project Information				Parameter/Method Request for Analysis											
Purchase Order	Project Name			WSPX Buq: 20117				A BART											
Work Order	Project Number							B											
Company Name	Bill To Company			WSPX Energy				C											
Send Report To	Invoice Attn			Mike Shoemaker				D											
Address	Address			1058 OF 215				E											
City/State/Zip	City/State/Zip			Paradise, CO				G											
Phone	Phone							H											
Fax	Fax							I											
e-Mail/Address	e-Mail/Address			bsmith@westernwaterandirrigation.com				J											
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold		
1	Yellow Jacket Spg (1)	1-27-16	0945	W	none	1													
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
Samples Please Print & Sign				Shipment Method				Required Turnaround Time: (Check Box)				Results Due Date:							
Relinquished by: J. Hood								<input type="checkbox"/> STD 10 Wk Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour											
Relinquished by: J. Hood				Received by: J. Hood				Cooler ID				Cooler Temp							
Logged by (Laboratory):				Checked by (Laboratory):				QC Packages: (Check One Box Below)											
								<input type="checkbox"/> Level II Std QC <input type="checkbox"/> TRAP Checklist											
								<input type="checkbox"/> Level III Std QC/Raw Date <input type="checkbox"/> TRAP Level IV											
								<input checked="" type="checkbox"/> Level IV SW846/CLP											
								<input type="checkbox"/> Other											
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035																			

ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: Western Water

Workorder No: 1601317

Project Manager: AW

Initials: CD Date: 1-28-16

1. Does this project require any special handling in addition to standard ALS procedures?		YES	NO
2. Are custody seals on shipping containers intact?	NONE	YES	NO
3. Are Custody seals on sample containers intact?	NONE	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		YES	NO
5. Are the COC and bottle labels complete and legible?		YES	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		YES	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	N/A	YES	NO
10. Is there sufficient sample for the requested analyses?		YES	NO
11. Were all samples placed in the proper containers for the requested analyses?		YES	NO
12. Are all samples within holding times for the requested analyses?		YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: _____ < green pea _____ > green pea	N/A	YES	NO
15. Do any water samples contain sediment? Amount Amount of sediment: _____ dusting _____ moderate _____ heavy	N/A	YES	NO
16. Were the samples shipped on ice?		YES	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4 RAD ONLY		YES	NO
Cooler #:	1		
Temperature (°C):	3.8		
No. of custody seals on cooler:	1		
External µR/hr reading:	11		
Background µR/hr reading:	11		
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES/ NO / NA (If no, see Form 008.)			

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

If applicable, was the client contacted? YES / NO / NA Contact: _____ Date/Time: _____

Project Manager Signature / Date: 1/28/16

*IR Gun #2: Oakton, SN 29922500201-0066

*IR Gun #4: Oakton, SN 2372220101-0002

ORIGIN ID: RILA (618) 298-1033
NICK MARTINEZ
ALS ENVIRONMENTAL
127 E. 1ST STREET

PARACHUTE, CO 81635
UNITED STATES US

SHIP DATE: 27JAN16
ACTWGT: 12.00 LB
CAD: 108058167/NET3730
DIMS: 9x12x10 IN
BILL RECIPIENT

TO **SAMPLE RECEIVING**
ALS LABORATORY GROUP
225 COMMERCE DRIVE

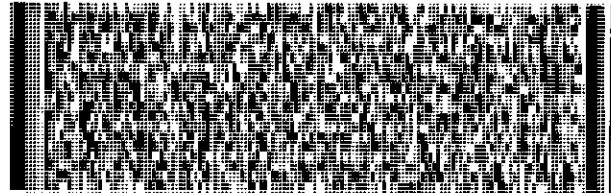
FORT COLLINS CO 80524

(970) 490-1511

REF: 012716-1

INV:
PO: PARACHUTE

DEPT:



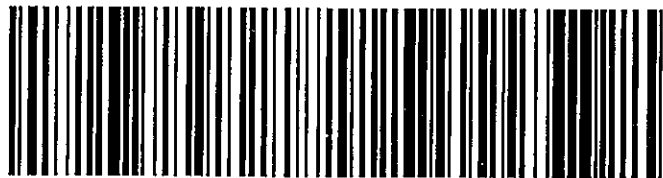
FedEx Ship Manager - Print Your Label(s)

THU - 28 JAN 3:00P
STANDARD OVERNIGHT

TRK# 7755 1645 9460
0201

72 FTCA

80524
CO-US **DEN**



1/27/2016

ALS Environmental -- FC**SAMPLE SUMMARY REPORT****Client:** Western Water and Land, Inc.**Date:** 11-Feb-16**Project:** WPX BWQ: RU 11-7**Work Order:** 1601317**Sample ID:** Yellow Jacket Spg**Lab ID:** 1601317-1**Legal Location:****Matrix:** WATER**Collection Date:** 1/27/2016 09:45**Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	MDL	Date Analyzed
BIOLOGICAL ACTIVITY REACTION TEST			BART				
					Prep Date: 2/3/2016		PrepBy: CDR
IRON RELATED BACTERIA	35000			1 cfu/ml	1		2/11/2016
SLIME FORMING BACTERIA	350000			1 cfu/ml	1		2/11/2016
SULFATE REDUCING BACTERIA	18000			1 cfu/ml	1		2/11/2016

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: Western Water and Land, Inc.
Project: WPX BWQ: RU 11-7
Sample ID: Yellow Jacket Spg
Legal Location:
Collection Date: 1/27/2016 09:45

Date: 11-Feb-16
Work Order: 1601317
Lab ID: 1601317-1
Matrix: WATER
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	MDL	Date Analyzed
----------	--------	------	--------------	-------	-----------------	-----	---------------

Explanation of Qualifiers

Radiochemistry:

U or ND - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.
- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.
G - Sample density differs by more than 15% of LCS density.
D - DER is greater than Control Limit
M - Requested MDC not met.
LT - Result is less than requested MDC but greater than achieved MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits
NC - Not Calculated for duplicate results less than 5 times MDC
B - Analyte concentration greater than MDC.
B3 - Analyte concentration greater than MDC but less than Requested 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.
S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

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.
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



Mesa County Health Department Regional Laboratory
510 29.5 Rd, Grand Junction, CO 81504
US Mail: PO Box 20,000, Grand Junction, CO 81502-5033
(970) 248-6999 fax (970) 683-6608
<http://health.mesacounty.us/lab>

Customer

Western Water & Land
743 Horizon Ct Suite 330
Grand Junction, CO 81506

Sample

<u>Invoice #</u> 264-16	<u>Date</u>	<u>Time</u>	<u>Collected By</u>
	<u>Collected</u> 1/27/2016	10:25 AM	NWS
<u>System</u>	<u>Received</u> 1/27/2016	1:56 PM	
	<u>Matrix</u> Stream/River Wat		
Rifle CO	<u>Purpose</u> Routine	<u>Chlorine</u>	
<u>Location</u> Beaver Creek 2	<u>Comments</u>		

Test Name

Result

Total Coliform /E. coli MPN 59.1 Total Coliforms/100 mL / <1.0 E. coli/100 mL

1/28/2016 10:22:43 AM

Invoice for Water Sampling Services

Detach and mail this portion with payment

Date Received	Payment Type	Due Date	Amount Paid	Balance
1/27/2016	Credit Card	2/27/2016	\$22.00	\$0.00

Invoice # 264-16

If paying for multiple samples, write Invoice #'s below:

Customer: (777) Western Water & Land

Amount Enclosed					
\$.	

MCHD Regional Lab
PO Box 20,000
Grand Junction, CO 81502-5033

☐ Check (Payable to MCHD)

☐ Credit Card: Visa Mastercard

Name on Card: _____

Billing Address: _____

Credit Card #: _____

Expiration Date: _____

Security Code: _____



Mesa County Health Department Regional Laboratory
510 29.5 Rd, Grand Junction, CO 81504
US Mail: PO Box 20,000, Grand Junction, CO 81502-5033
(970) 248-6999 fax (970) 683-6608
<http://health.mesacounty.us/lab>

Customer

Western Water & Land
743 Horizon Ct Suite 330
Grand Junction, CO 81506

Sample

<u>Invoice #</u>	265-16	<u>Date</u>	<u>Time</u>	<u>Collected By</u>
		<u>Collected</u>	1/27/2016	10:25 AM SG
<u>System</u>		<u>Received</u>	1/27/2016	1:56 PM
		<u>Matrix</u>	Stream/River Wat	
	Rifle CO	<u>Purpose</u>	Routine	<u>Chlorine</u>
<u>Location</u>	Yellow Jacket Spring		<u>Comments</u>	

Test Name

Result

Total Coliform /E. coli MPN 24.3 Total Coliforms/100 mL / 6.3 E. coli/100 mL

1/28/2016 10:22:43 AM

Invoice for Water Sampling Services

Detach and mail this portion with payment

Date Received	Payment Type	Due Date	Amount Paid	Balance
1/27/2016	Credit Card	2/27/2016	\$22.00	\$0.00

Invoice # 265-16

If paying for multiple samples, write Invoice #'s below:

Customer: (777) Western Water & Land

Amount Enclosed

\$.

MCHD Regional Lab
PO Box 20,000
Grand Junction, CO 81502-5033

☐ Check (Payable to MCHD)

☐ Credit Card: Visa Mastercard

Name on Card: _____

Billing Address: _____

Credit Card #: _____

Expiration Date: _____

Security Code: _____