Western Water & Land, Inc.

April 3, 2014

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

RE: GV 84-1 Drill Pad First Subsequent Results Report, January 2014 Event

Dear Mr. Danforth,

Western Water & Land, Inc. (WWL) has completed the first subsequent baseline water quality sampling for the WPX Energy Rocky Mountain LLC (WPX) GV 84-1 Drill Pad in accordance with the Colorado Oil and Gas Association (COGA) Voluntary Baseline Groundwater Quality Sampling Program (Program). The GV 84-1 Drill Pad is located in NW¼, SW ¼, Section 1, Township 7 South, Range 95 West, 6th PM.

Under the COGA Program, water samples are collected from the two closest groundwater features with reasonable access, located within a 0.5-mile radius of the referenced drill pad (GV 84-1). Groundwater features include permitted and registered groundwater wells and groundwater seeps and springs. The initial groundwater feature locations were selected by Olsson Associates and initial baseline sampling was performed in December 2012.

The COGA Program called for one subsequent groundwater sampling event to be conducted within one year of the oil and gas well completion. To be consistent with Colorado Oil and Gas Conservation Commission (COGCC) Rule 609, two subsequent sampling events are required. The first subsequent sampling event was performed by WWL in January, 2014. WWL sampled in accordance with the analytic schedule and sampling procedure requirements associated with Rule 609. The analytic schedule for Rule 609 includes all of the analyses required under the COGA Program with the additional analyses of Gasoline Range Organics (TPH volatiles), Diesel Range Organics (TPH extractables), fluoride, barium, and bacteria.

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

FIELD SAMPLING LOCATIONS AND ACTIVITIES

Two springs were selected by Olsson for the COGA voluntary groundwater sampling program however, WWL determined one of the springs to be an intermittent creek and reclassified the location as a surface water sampling site. One spring and one surface water site were selected for the COGA voluntary groundwater sampling:

- Cottonwood Spring (Spring 1)

  - Landowner: Diamond Elk, LLC

- Redding Spring (Spring 2)
  - Water Right: Redding Spring; Case No.: 99CW0294
  - Water Right Held by: Bureau of Land Management
  - Landowner: Bureau of Land Management

After field investigation, WWL determined the Cottonwood Spring (Spring 1) sampling site was an intermittent stream rather than a spring, and reclassified it as a surface water site. Access to the sampling sites was granted through existing agreements between WPX and the landowners. In addition, the initial sample collected for Redding Spring was not collected at the spring's emanation point, but at a location approximately 1,400 feet downgradient from the emanation point in a natural drainage. WWL collected the subsequent samples at locations consistent with the initial sampling locations.

For the first subsequent sampling event, two samples and one field duplicate were collected for the GV 84-1 Drill Pad. Samples "Cottonwood Spg 1", "Redding Spg", and "Spg GV 84-1" (duplicate of Redding Spg) were collected on January 14, 2014.

WPX Land Representative Mr. Gary Reed was present when samples Redding Spg and Spg GV 84-1 were collected. Redding Spring is located a short distance uphill from Drill Pad PA 12-1. The samples were collected directly from the drainage that is supplied by the spring's discharge. The sampling site where sample Cottonwood Spg 1was collected is located in an intermittent drainage near Drill Pad Federal W-34-2. The sample was collected directly from the drainage whose headwater location is approximately 5.2 miles to the southeast. 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 SAP and COGCC Model SAP. Sampling Method 1 for springs and seeps, described in Version 1 of the COGCC Model SAP, was used to collect these samples.

Samples were relinquished to the analytical laboratory's (ALS, Fort Collins, Colorado) courier in Parachute, Colorado, who carefully packs them in plastic ice chests (coolers) with ice for preservation and ships them to the analytical laboratory by way of overnight courier (FedEx Ground).

QUALITY CONTROL

Quality control measures consisted of a review of field sampling procedures, and the analytical laboratory quality control data. Laboratory quality control information was reviewed and checked for consistency in meeting acceptance criteria and the assignment of data qualifiers. In addition, WWL conducted quality control evaluations of cation-anion balance (CAB) and total dissolved solids (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 and COGCC Model SAP. All samples were collected by direct filling methods; dissolved gas sampling was conducted using Method 1 for springs and seeps. No field procedure deviations occurred that were cause for data qualification.

COC

The chain-of-custody form was reviewed for correct and complete sample IDs, requested analysis, and other information. The analytes requested on the COC matched the requirements of Rule 609. DRO

(diesel range organics) and GRO (gasoline range organics) were designated on the COC in place of TPH, a required analysis for Rule 609. No other errors or pertinent information was observed, and no corrections were needed.

Sample Receipt
The samples were received by ALS in two coolers within the temperature range criteria (4°C ± 2°C). Custody seals were not used on the sample containers or coolers. No quality control issues were reported on the sample receipt form. No qualifiers were assigned to results based on sample receipt conditions.

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

Analytical Methods
The analytical methods used by ALS were checked for consistency with the analytical schedule in the SAP or other pertinent documents. Analytical methods were found to be consistent with the following modifications: Total phosphorous was analyzed using Method 365.2. Gasoline Range Organics (TPH volatiles) were analyzed using Method SW8260_25 Revision C. Diesel Range Organics (TPH extractables) were analyzed according to SW846 8000C and 8015D.

The lab report summary lists the analytic method for total xylenes as Method SW8260_25 Revision C and the analytic method for total nitrate/nitrite as N as EPA 300.0; however, the results are simply calculated by summing the results of the individual isotopes.

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

All analyzed metals had dilution factors of 10. All other analytes had a dilution factor of 1. ALS reports sample results at the reporting limit (RL) as "undetected" or "U" rather than reporting results as less than the reporting limit, e.g. < 0.05ug/L.

Completeness
Data completeness is a measure of requested analysis and received results. The analytical constituents required under Rule 609 were compared to those requested and analyzed in the laboratory reports. Qualified data are included as analyzed data. No data were rejected for field or analytical reasons. WWL separately designated DRO (Diesel Range Organics) and GRO (Gasoline Range Organics) for the TPH analysis required under Rule 609. All requested analytical data matched the laboratory reported data results; data completeness is considered 100 percent.

Cation-Anion Balance
The cation-anion balance (CAB) calculates the total charge of positively charged ions and the total charge of the negatively charged ions. It is a measure of the quality of the analysis; if the charge is not balanced, an error may exist in the analysis. CAB calculations were performed for the sample; if the CAB exceeded ±5 %, i.e. less than 95 % or greater than105 %, 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:

- Cottonwood Spg 1: 0.457 %
- Redding Spg: 1.018 %
- GV 84-1 Spg: 0.946 %

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 and sample ratios less than 0.80 and greater than 1.20 are cause for a review of major ion reporting errors.

In general, WWL will assign a qualifier (an estimated result) when TDS ratios are less than or equal to 0.5 and equal to or greater than1.5, 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 the samples are as follows:

- Cottonwood Spg 1: 1.28
- Redding Spg: 1.28
- GV 84-1 Spg: 1.30

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.

One field duplicate (sample Spg GV 84-1) was collected for Redding Spring (sample Redding Spg). There were no exceedances of the acceptable RPD criteria; no data were qualified.

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

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

All sampling event data packages showed that no laboratory control samples exceeded the QC limits or acceptance criteria without data qualification, and no recovery limits were exceeded. No qualifiers were assigned to the results.

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

ALS selected Cottonwood Spg 1 and Redding Spg for testing matrix quality control samples. Only DRO and dissolved gases were selected for MS and MSD testing. The MS and MSD recoveries met guidance criteria for precision and accuracy for all analytes. No qualifiers were assigned to the results by the lab. WWL did not assign additional qualifiers to the analytical results.

Precision
Precision is the measurement of how closely replicate sample constituents agree and is not related to the true value (concentration). Precision is measured using RPD calculations for laboratory duplicate samples such as LCSD and MSD samples and any other duplicate samples generated by the laboratory. The RPDs were compared to the laboratory acceptance limit of 20 % for metals and general or wet chemistry and 30 % for organic analytes. RPDs were not used when the sample concentration was too low (< 10X MDL) for accurate evaluation. No qualifiers were assigned by the laboratory because of RPD values exceeding the laboratory acceptance criteria.

Data Quality Review Sheets are presented in Attachment C.

Summary
ALS Laboratories assigned analytical results that were undetected with a "U" qualifier. WWL assigned an "H" qualifier for analyses performed outside of analytic holding times to indicate the results are estimated. See Attachment C and Attachment D for individual parameters that were qualified.

ANALYTICAL RESULTS

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

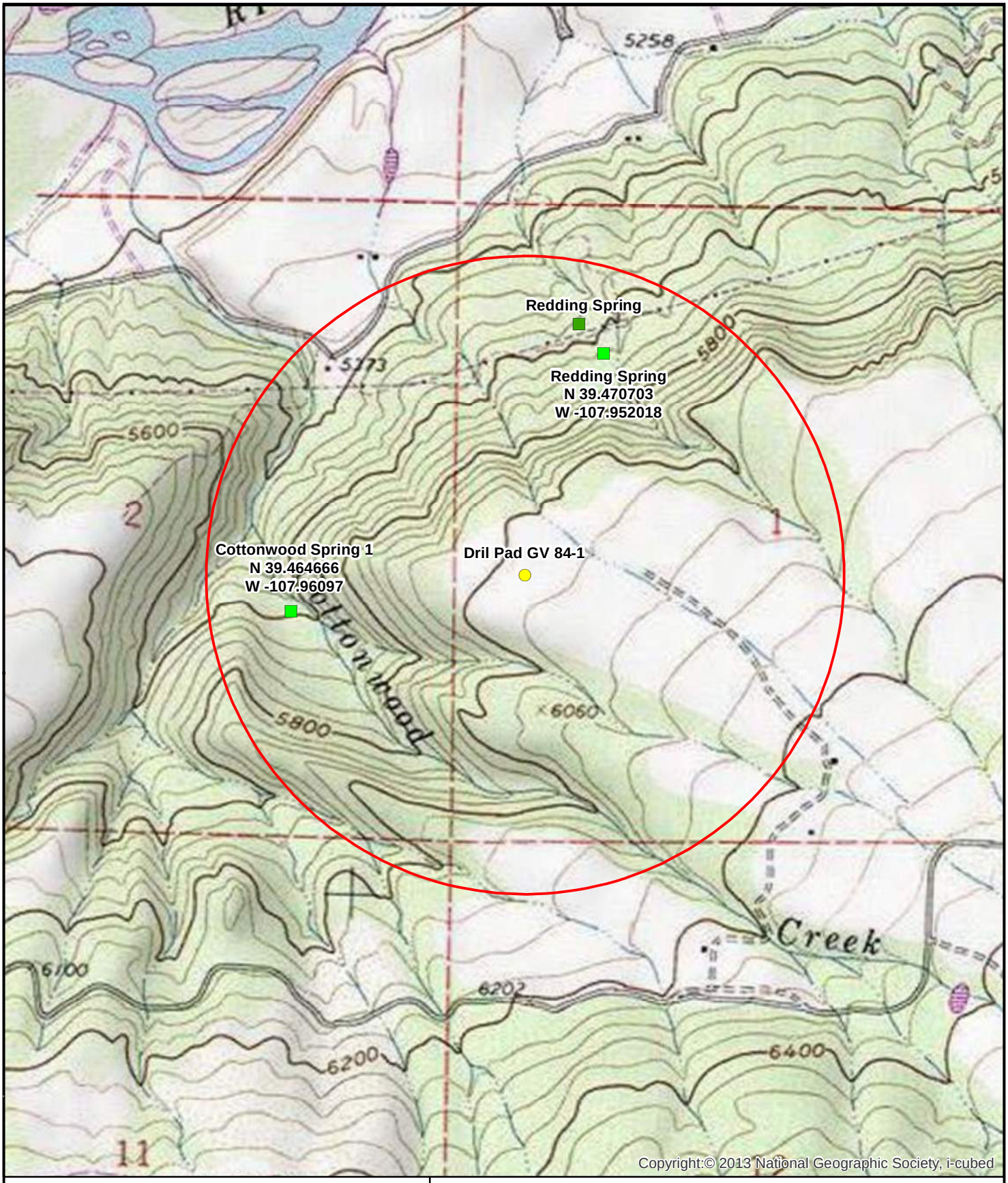
If you have any questions or concerns, please contact me at (970) 242-0170.

Sincerely,

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

Attachments

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



Legend

- Sample Location(s)
- Drill Pad GV 84-1
- Decree
- 0.5-Mile Radius Evaluation Area
- Constructed well

N

Feet

1,000 500 0 1,000

1:13,000

Figure 1: GV 84-1 Sample Location Map
COGA Voluntary Program First Subsequent Sampling
NW1/4, SW1/4, S1, T7S, R95W, 6 PM

Garfield County, Colorado

WPX Energy Rocky Mountain LLC

Basemap Source: Bing Maps and Esri ArcGIS Online

Western Water & Land, Inc.
Applications in Earth Science

ATTACHMENT A

Photographs

Photo 1. Cottonwood Spring Sampling Location (Cottonwood Spg)

Photo 2. Cottonwood Spring Sampling Location (Cottonwood Spg); View Downstream

Photo 3. Redding Spring Sampling Location (Redding Spg)

Photo 4. Redding Spring Sampling Location (Redding Spg); View Downstream

ATTACHMENT B

Field Monitoring Forms

WPX BWQ Surface Water Monitoring Field Form

Project Information			
Project:	GV 84-1 BWQ	Sample Purpose:	Subsequent / SMA
Site Name (Well Pad):	GV 84-1	Site API:	05-045-20881
Station Name:	Diamond Elk Cottonwood Creek	Sample Date:	1/14/14
COGCC Facility ID:	753082	Start Time:	1315
Field Sample ID:	Cottonwood Spg 1	End Time:	1445
Landowner Name:	Diamond Elk, LLC	Sample Time:	1400
Landowner Address:	PO Box 370, Parachute, CO 81635	Sample Team:	SLK, NWS
Water Right/Well Owner:	N/A	Observer:	NWS
Water Right/Well Permit:	N/A	Lead Signature/Date:	1/17/14

Station Information			
Station Description:	175' from pad, ~50' downstream from fenceline		
Approximate Distance to Well Pad:	~2000 ft (0.38 mi)		
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:	5 ft	Sampling Location Depth:	0.4 ft
GPS Location:	Zone x 107.916097 y 39.464616 z 5548		

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:	Ø

Field Measurements

Parameter	Units	Reading	Time	Flag Code	Instrument	In-situ or Container	Comments
Water Temp	deg C	3.0	1425		YSI-PRO	in situ	2.9*
pH	s.u.	7.87					7.81*
Sp. Conductivity	uS/cm	576.9					626.4*
Conductivity	uS/cm	335.0					361.9*
DO Saturation	%	80.4					6.1*
DO	mg/L	10.76					0.76*
Baro Press	mmHg	630.3					
ORP	RmV	118.1					144.8*
Turbidity	NTU	8.71		AV	MicroTPI		7.92, 9.07, 9.15
Discharge	gpm	124.4		J	bucket + watch		
H2S	mg/L	NM					

Color:	(Clear) / White / Yellow / Brown / Green / Blue / Other	(Light) / Med / Dark	
Odor:	(None) / Mild / Mod / Strong		
Effervescence:	(None) / Mild / Mod / Strong	Bubbles:	(None) / Low / Mod / High
Sediment:	None / (Light) / Mod / Heavy	VOA Headspace:	(None) / ≤ Pea Size / ≥ Pea Size
Lab Analysis:	(Rule 609) / COA 9 / COA 22 / Other		
Field Filtered:	Yes / (No)	Filter Size: NA	No. Filters used: NA

Flag Codes: NM (not measured), J (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)

WPX BWQ Surface Water Monitoring Field Form

Landowner Comments on water quality:

N/A

* DO reading low — measurements read at 1420, Probe in sediment. Adjusted and rerecorded measurements at 1425

Additional information:

Discharge: 3.75 g / 1.9 sec = 118.4 gpm
4 g / 2.1 sec = 114.3 gpm
3.75 g / 1.6 sec = 140.6 gpm
} = 124.4 gpm

Sampling location not far from pad. Followed fence line down to creek. Found sampled location from Olsson Associates, too much debris at location — ~~coon~~ couldn't collect sample there. Went downstream ~50', dug large hole for inverted sample bottles.
Discharge measured ~100' downstream of WWL sampling location.
Gary Reed no longer present
Staked sampling location

Calibration info on Redding Spg. (GV 24-7)

Calibration Information			Date: 2/14/14			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:	WPX BWQ	Sample Purpose:	Subsequent 1 SUA
Site Name (Well Pad):	GV 84-1	Site API:	05-045-20881
Station Name:	Federal Redding Spring	Sample Date:	1/14/14
COGCC Facility ID:	753083	Start Time:	1045
Field Sample ID:	Redding Spg.	End Time:	1215
Landowner Name:	BLM	Sample Time:	~~SLK, NWS~~ 1143
Landowner Address:	2300 River Frontage Road Silt, CO	Sample Team:	SLK, NWS
Water Right/Well Owner:	BLM	Observer:	SLK
Water Right/Well Permit:	Redding Spring	Lead Signature/Date:	1/17/14

Station Information	
Station Description:	Spg. Uphill from pad
Approximate Distance to Well Pad:	~1800 ft (0.35 mi)
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:	2.5 ft — Sampling Location Depth: 0.3 ft
GPS Location:	Zone — x 107.95202 y 39.47070 z 5641

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

Field Measurements

Parameter	Units	Reading	Time	Flag Code	Instrument	In-situ or Container	Comments
Water Temp	deg C	2.4	1218		YSI PRO	In-situ	
pH	s.u.	7.46					
Sp. Conductivity	uS/cm	590.1					
Conductivity	uS/cm	335.6					
DO Saturation	%	51.4					
DO	mg/L	7.02					
Baro Press	mmHg	628.0					
ORP	RmV	206.5					
Turbidity	NTU	6.79		AV	micro TP		6.34, 6.35, 7.67
Discharge	gpm	5.3	~~1205~~ 1130	J	bucket + watch		see comments (back)
H2S	mg/L	NM					

Color:	Clear / White / Yellow / Brown / Green / Blue / Other	Light / Med / Dark	
Odor:	None / Mild / Mod / Strong		
Effervescence:	None / Mild / Mod / Strong	Bubbles:	None / Low / Mod / High
Sediment:	None / Light / Mod / Heavy	VOA Headspace:	None / ≤ Pea Size / ≥ Pea Size
Lab Analysis:	~~Rule 609~~ / COA 9 / COA 22 / Other		
Field Filtered:	Yes / No — Filter Size: NA	No. Filters used:	NA

Flag Codes: NM (not measured), J (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)

WPX BWQ Surface Water Monitoring Field Form

Landowner Comments on water quality:

N/A

Additional information:

Duplicate Sample: Spg. GV 84-1 @ 1330 on COC, actual sample time: 1143, collected concurrently as Redding Spg.

Discharge: 2100 mL / 6.45 = 5.2 gpm
@ ~~1285~~ 1130 1900 mL / 6.05 missing ~1/8 flow = 5.0 gpm
1800 mL / 5.15 = 5.6 gpm

Frozen water on banks both upstream and downstream of sampling location. Discharge should be considered estimated. Discharge measured ~100 ft. downstream of sampling location.

Gary Reed present for sample. Left at ~1230.
Staked sampling location

Calibration Information			Date: 1/14/14			Location: WWL office		
Instrument	Parameter	Units	Time	Calibration Standard Value	Calibration Standard Temp (°C)	Instrument Reading of Standard	Adjusted Reading	Comments
YSI PRO	pH	s.u.	0711	7.00	21.7	6.91		
	pH	s.u.	0715	10.01	21.7	10.10		
	pH	s.u.	0720	4.01	21.7	3.95	4.02	
	SpC	uS/cm	0708	8974	21.5	8991	8975	
	SpC	uS/cm						
	DO	%	0729		21.6	82.7		649.1 mmHg
	DO	%						
	ORP	RmV						
MICRO TP	Turbidity	NTU	0725					

ATTACHMENT C

Data Quality Review Sheets

DATA QUALITY REVIEW SHEET

Facility ID:	753082	Project:	GV 84-1 BWQ
Station Name:	Diamond Elk Cottonwood Creek	Lab Work Order:	1401147-1
Sample Date:	1/14/2014	QA/QC Review Date:	3/17/2014
Field Sample ID:	Cottonwood Spg 1	Reviewer:	S. Kipp

Field Sampling Data Review	**Yes**	**No**	**N/A**
1. Well properly purged?	☐	☐	☒
2. Flow rate reduced prior to sampling?	☐	☐	☒
3. Water quality parameters stable prior to sampling?	☒	☐	☐
4. Field instruments calibrated properly?	☒	☐	☐
5. Sampling methods performed according to SAP procedures?	☒	☐	☐
6. Procedures consistent with obtaining a representative sample?	☒	☐	☐
Lab Data Report Review			
7. Proper sample custody maintained until laboratory receipt?	☒	☐	☐
8. Receipt form is without discrepancies? *If no, list in comments.*	☒	☐	☐
9. All samples analyzed for the requested analyses?	☒	☐	☐
10. Proper laboratory methods used?	☒	☐	☐
11. All sample holding times met (other than field pH)?	☒	☐	☐
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?	☒	☐	☐
13. Was the field investigation sample matrix used by the lab for matrix QC for all analyses?	☒	☐	☐
14. Laboratory qualifiers for data (other than non-detect)? *List in comments*.	☐	☒	☐
15. Additional qualifiers assigned (other than pH)?	☐	☒	☐
16. Are corrective actions required? *If yes, list actions and dates to be completed by:*	☐	☒	☐
Corrective Action	*Date to be completed*		
None			

Calculated Parameters	**Calculated Value**	**Lab Value**	**Ratio/Percent Difference**	**Acceptable Limit**	**Meets QC Criteria?**
Cation/Anion Balance, % (CAB)	0.457	N/A	N/A	±5%	☒
Total Dissolved Solids, mg/L (TDS)	484.6	380	1.28	0.8 – 1.2	☐
Specific Conductance, µS/cm (SpC)	567	621	0.91	0.8 – 1.2	☒

Comments: Trip blank not listed on COC. Holding time exceeded for pH; WWL qualified with "H" to indicate result is estimated. TDS ratio slightly outside of QC criteria, but data not qualified.

DATA QUALITY REVIEW SHEET

Facility ID:	753083	Project:	GV 84-1 BWQ
Station Name:	Federal Redding Spring	Lab Work Order:	1401147-2
Sample Date:	1/14/2014	QA/QC Review Date:	3/17/2014
Field Sample ID:	Redding Spg	Reviewer:	S. Kipp

Field Sampling Data Review	**Yes**	**No**	**N/A**
1. Well properly purged?	☐	☐	☒
2. Flow rate reduced prior to sampling?	☐	☐	☒
3. Water quality parameters stable prior to sampling?	☒	☐	☐
4. Field instruments calibrated properly?	☒	☐	☐
5. Sampling methods performed according to SAP procedures?	☒	☐	☐
6. Procedures consistent with obtaining a representative sample?	☒	☐	☐
Lab Data Report Review			
7. Proper sample custody maintained until laboratory receipt?	☒	☐	☐
8. Receipt form is without discrepancies? *If no, list in comments.*	☒	☐	☐
9. All samples analyzed for the requested analyses?	☒	☐	☐
10. Proper laboratory methods used?	☒	☐	☐
11. All sample holding times met (other than field pH)?	☒	☐	☐
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?	☒	☐	☐
13. Was the field investigation sample matrix used by the lab for matrix QC for all analyses?	☒	☐	☐
14. Laboratory qualifiers for data (other than non-detect)? *List in comments*.	☐	☒	☐
15. Additional qualifiers assigned (other than pH)?	☐	☒	☐
16. Are corrective actions required? *If yes, list actions and dates to be completed by:*	☐	☒	☐

Corrective Action	*Date to be completed*
None	

Calculated Parameters	**Calculated Value**	**Lab Value**	**Ratio/Percent Difference**	**Acceptable Limit**	**Meets QC Criteria?**
Cation/Anion Balance, % (CAB)	1.018	N/A	N/A	±5%	☒
Total Dissolved Solids, mg/L (TDS)	486.2	380	1.28	0.8 – 1.2	☐
Specific Conductance, µS/cm (SpC)	567	630	0.90	0.8 – 1.2	☒

Comments: Trip blank not listed on COC. Holding time exceeded for pH; WWL qualified with "H" to indicate result is estimated. TDS ratio slightly outside of QC criteria, but data not qualified.

DATA QUALITY REVIEW SHEET

Facility ID:	753083	Project:	GV 84-1 BWQ
Station Name:	Federal Redding Spring	Lab Work Order:	1401148-1
Sample Date:	1/14/2014	QA/QC Review Date:	3/17/2014
Field Sample ID:	GV 84-1 Spg	Reviewer:	S. Kipp

Field Sampling Data Review	**Yes**	**No**	**N/A**
1. Well properly purged?	☐	☐	☒
2. Flow rate reduced prior to sampling?	☐	☐	☒
3. Water quality parameters stable prior to sampling?	☒	☐	☐
4. Field instruments calibrated properly?	☒	☐	☐
5. Sampling methods performed according to SAP procedures?	☒	☐	☐
6. Procedures consistent with obtaining a representative sample?	☒	☐	☐
Lab Data Report Review			
7. Proper sample custody maintained until laboratory receipt?	☒	☐	☐
8. Receipt form is without discrepancies? *If no, list in comments.*	☒	☐	☐
9. All samples analyzed for the requested analyses?	☒	☐	☐
10. Proper laboratory methods used?	☒	☐	☐
11. All sample holding times met (other than field pH)?	☒	☐	☐
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?	☒	☐	☐
13. Was the field investigation sample matrix used by the lab for matrix QC for all analyses?	☒	☐	☐
14. Laboratory qualifiers for data (other than non-detect)? *List in comments*.	☐	☒	☐
15. Additional qualifiers assigned (other than pH)?	☐	☒	☐
16. Are corrective actions required? *If yes, list actions and dates to be completed by:*	☐	☒	☐

Corrective Action	*Date to be completed*
None	

Calculated Parameters	**Calculated Value**	**Lab Value**	**Ratio/Percent Difference**	**Acceptable Limit**	**Meets QC Criteria?**
Cation/Anion Balance, % (CAB)	0.946	N/A	N/A	±5%	☒
Total Dissolved Solids, mg/L (TDS)	493.3	380	1.30	0.8 – 1.2	☐
Specific Conductance, µS/cm (SpC)	567	628	0.90	0.8 – 1.2	☒

Comments: Trip blank not listed on COC. Holding time exceeded for pH; WWL qualified with "H" to indicate result is estimated. TDS ratio slightly outside of QC criteria, but data not qualified.

ATTACHMENT D

Summary of Analytical Results

WPX BWQ: GV 84-1 COGA Voluntary Subsequent 1 Sampling															
Station Name				**Diamond Elk Cottonwood Creek**						**Diamond Elk Cottonwood Creek**					
Facility ID				**753082**						**753082**					
Sample Date				**12/6/2012 (Baseline)**						**1/14/2014 (Subsequent 1)**					
Field Sample ID				**SPRING1**						**Cottonwood Spg 1**					
Lab Sample ID				**D41639-1**						**1401147-1**					
Sampling Agency				**Olsson Associates**						**Western Water & Land, Inc.**					
	Reporting Units	**AMS Analytic Method**	**ALS Analytic Method**	**Result**	**Lab Qual**	**WWL Qual**	**RL**	**MDL**	**DF**	**Result**	**Lab Qual**	**WWL Qual**	**RL**	**MDL**	**DF**
Inorganics															
Alkalinity AS CaCO3, Total	mg/l	SM20 2320B	SM2320B	303			5		1	320			20		1
Alkalinity, Bicarbonate as CaCO3	mg/l	SM20 2320B	SM2320B	303			5		1	320			20		1
Alkalinity, Carbonate as CaCO3	mg/l	SM20 2320B	SM2320B	5	U		5		1	20	U		20		1
Bromide	mg/l	EPA 300.0/SW846 9056	EPA300.0	0.061			0.05		1	0.2	U		0.2	0.06	1
Chloride	mg/l	EPA 300.0/SW846 9056	EPA300.0	5.2			0.5		1	7			0.2	0.06	1
HARDNESS (AS CACO3)	mg/l	SM20 2340B	NM	237			1.8		1	NM					
Fluoride	mg/l	NM	EPA300.0	NM						0.19			0.1	0.03	1
Nitrate as N	mg/l	EPA 300.0/SW846 9056	EPA300.0	0.39			0.05		5	0.44			0.2	0.06	1
Nitrate/Nitrite as N	mg/l	NM	EPA300.0	NM						0.44			0.1		1
Nitrite as N	mg/l	EPA 300.0/SW846 9056	EPA300.0	0.004	U		0.004		1	0.1	U		0.1	0.03	1
pH	s.u.	NM	SM4500-H	NM						8.33		H	0.1		1
Specific Conductivity	umhos/cm	SM20 2510B (1997)	SM2510B	517			1		1	621			1		1
Sulfate	mg/l	EPA 300.0/SW846 9056	EPA300.0	24			0.5		1	25			1	0.3	1
Total Dissolved Solids	mg/l	SM18/20 2540C	SM2540C	386			10		1	380			20		1
Total Phosphorous	mg/l	HACH8190/SM4500P-B/E	EPA365.2	0.048			0.01		1	0.052			0.05	0.015	1
Dissolved Metals															
Barium	ug/l	NM	EPA200.8	NM						150			1	0.3	10
Boron	ug/l	EPA 200.7	EPA200.8	50	U		50		1	66			50	15	10
Calcium	ug/l	EPA 200.7	EPA200.8	56500			400		1	67000			1000	65	10
Iron	ug/l	EPA 200.7	EPA200.8	12.4			10		1	100	U		100	30	10
Magnesium	ug/l	EPA 200.7	EPA200.8	23200			200		1	28000			100	30	10
Manganese	ug/l	EPA 200.7	EPA200.8	5.6			5		1	4.6			2	0.6	10
Potassium	ug/l	EPA 200.7	EPA200.8	2080			1000		1	2300			1000	300	10
Selenium	ug/l	EPA 200.8	EPA200.8	1.1			0.8		2	1	U		1	0.5	10
Sodium	ug/l	EPA 200.7	EPA200.8	29700			400		1	34000			1000	300	10
Strontium	ug/l	EPA 200.7	EPA200.8	482			5		1	560			1	0.3	10
Organics															
Diesel Range Organics	mg/l	NM	SW8015M	NM						0.5	U		0.5	0.15	1
Gasoline Range Organics	ug/l	NM	SW8260_25	NM						100	U		100	30	1
Dissolved Gases [1]															
Ethane	ug/l	RSK175 MOD	RSK175	1.6	U		1.6	0.8	1	2	U		2	2	1
Methane	ug/l	RSK175 MOD	RSK175	0.4	J		0.8	0.4	1	1	U		1	1	1
Propane	ug/l	RSK175 MOD	RSK175	18	U		18	9	1	1	U		1	1	1

WPX BWQ: GV 84-1 COGA Voluntary Subsequent 1 Sampling															
Station Name				**Diamond Elk Cottonwood Creek**						**Diamond Elk Cottonwood Creek**					
Facility ID				**753082**						**753082**					
Sample Date				**12/6/2012 (Baseline)**						**1/14/2014 (Subsequent 1)**					
Field Sample ID				**SPRING1**						**Cottonwood Spg 1**					
Lab Sample ID				**D41639-1**						**1401147-1**					
Sampling Agency				**Olsson Associates**						**Western Water & Land, Inc.**					
	Reporting Units	**AMS Analytic Method**	**ALS Analytic Method**	**Result**	**Lab Qual**	**WWL Qual**	**RL**	**MDL**	**DF**	**Result**	**Lab Qual**	**WWL Qual**	**RL**	**MDL**	**DF**
VOCs															
Benzene	ug/l	SW846 8260B	SW8260_25	1	U		1	0.27	1	1	U		1	0.3	1
Ethylbenzene	ug/l	SW846 8260B	SW8260_25	2	U		2	0.33	1	1	U		1	0.3	1
M+P-Xylene	ug/l	NM	SW8260_25	NM						1	U		1	0.3	1
o-Xylene	ug/l	NM	SW8260_25	NM						1	U		1	0.3	1
Toluene	ug/l	SW846 8260B	SW8260_25	2	U		2	1	1	1	U		1	0.3	1
Xylenes (Total)	ug/l	SW846 8260B	SW8260_25	3	U		3	2	1	1	U		1		1
Bacteria															
Iron Related Bacteria	nu	NM	BART	NM						1			1		1
Slime forming bacteria	nu	NM	BART	NM						1			1		1
Sulfate Reducing Bacteria	nu	NM	BART	NM						1			1		1
Field_Parameters															
Bubbles	nu	Field	Field	None						None					1
Color	nu	Field	Field	Clear						Clear					1
Conductivity, Field	uS/cm	Field	Field	NM						335					1
Discharge, measured	gpm	Field	Field	NM						124.4		AV			1
Dissolved Oxygen, Field	mg/l	Field	Field	9.32						10.76					1
Dissolved Oxygen, Field,%	%	Field	Field	94.3						80.4					1
Effervescence	nu	Field	Field	None						None					1
Odor	nu	Field	Field	None						None					1
ORP, field	mv	Field	Field	NM						118.1					1
pH, Field	s.u.	Field	Field	8.55						7.87					1
Sediment	nu	Field	Field	None						Light					1
Specific Conductivity, Field	uS/cm	Field	Field	585						576.9					1
Temperature, Water	Deg C	Field	Field	7.53						3					1
Turbidity, field	NTUs	Field	Field	53.0						8.71		AV			1
VOA Headspace	nu	Field	Field	NM						None					1

Notes:

[1] AMS units coverted from mg/L to ug/L

[a] Field duplicate

U = not detected at the reporting limit

NM = not measured

J = result between RL and MDL, estimated

H = hold time exceeded

AV = result averaged

WPX BWQ: GV 84-1 COGA Voluntary Subsequent 1 Sampling																					
Station Name				**Federal Redding Spring**						**Federal Redding Spring**						**Federal Redding Spring**					
Facility ID				**753083**						**753083**						**753083**					
Sample Date				**12/6/2012 (Baseline)**						**1/14/2014 (Subsequent 1)**						**1/14/2014 (Subsequent 1)**					
Field Sample ID				**SPRING2**						**Redding Spg**						**Spg GV 84-1 [a]**					
Lab Sample ID				**D41639-2**						**1401147-2**						**1401148-1**					
Sampling Agency				**Olsson Associates**						**Western Water & Land, Inc.**						**Western Water & Land, Inc.**					
	Reporting Units	**AMS Analytic Method**	**ALS Analytic Method**	**Result**	**Lab Qual**	**WWL Qual**	**RL**	**MDL**	**DF**	**Result**	**Lab Qual**	**WWL Qual**	**RL**	**MDL**	**DF**	**Result**	**Lab Qual**	**WWL Qual**	**RL**	**MDL**	**DF**
Inorganics																					
Alkalinity AS CaCO3, Total	mg/l	SM20 2320B	SM2320B	322			5		1	320			20		1	330			20		1
Alkalinity, Bicarbonate as CaCO3	mg/l	SM20 2320B	SM2320B	322			5		1	300			20		1	330			20		1
Alkalinity, Carbonate as CaCO3	mg/l	SM20 2320B	SM2320B	5	U		5		1	20	U		20		1	20	U		20		1
Bromide	mg/l	EPA 300.0/SW846 9056	EPA300.0	0.051			0.05		1	0.2	U		0.2	0.06	1	0.2	U		0.2	0.06	1
Chloride	mg/l	EPA 300.0/SW846 9056	EPA300.0	4.1			0.5		1	4.9			0.2	0.06	1	4.8			0.2	0.06	1
HARDNESS (AS CACO3)	mg/l	SM20 2340B	NM	230			1.8		1	NM						NM					
Fluoride	mg/l	NM	EPA300.0	NM						0.2			0.1	0.03	1	0.19			0.1	0.03	1
Nitrate as N	mg/l	EPA 300.0/SW846 9056	EPA300.0	0.65			0.05		5	0.65			0.2	0.06	1	0.63			0.2	0.06	1
Nitrate/Nitrite as N	mg/l	NM	EPA300.0	NM						0.65			0.1		1	0.63			0.1		1
Nitrite as N	mg/l	EPA 300.0/SW846 9056	EPA300.0	0.004	U		0.004		1	0.1	U		0.1	0.03	1	0.1	U		0.1	0.03	1
pH	s.u.	NM	SM4500-H	NM						8.39		H	0.1		1	8.39		H	0.1		1
Specific Conductivity	umhos/cm	SM20 2510B (1997)	SM2510B	533			1		1	630			1		1	628			1		1
Sulfate	mg/l	EPA 300.0/SW846 9056	EPA300.0	22.6			0.5		1	26			1	0.3	1	26			1	0.3	1
Total Dissolved Solids	mg/l	SM18/20 2540C	SM2540C	396			10		1	380			20		1	380			20		1
Total Phosphorous	mg/l	HACH8190/SM4500P-B/E	EPA365.2	0.062			0.01		1	0.05	U		0.05	0.015	1	0.05	U		0.05	0.015	1
Dissolved Metals																					
Barium	ug/l	NM	EPA200.8	NM						120			1	0.3	10	120			1	0.3	10
Boron	ug/l	EPA 200.7	EPA200.8	56.7			50		1	74			50	15	10	69			50	15	10
Calcium	ug/l	EPA 200.7	EPA200.8	54100			400		1	62000			1000	65	10	61000			1000	65	10
Iron	ug/l	EPA 200.7	EPA200.8	10	U		10		1	100	U		100	30	10	100	U		100	30	10
Magnesium	ug/l	EPA 200.7	EPA200.8	23000			200		1	27000			100	30	10	27000			100	30	10
Manganese	ug/l	EPA 200.7	EPA200.8	5	U		5		1	2	U		2	0.6	10	2	U		2	0.6	10
Potassium	ug/l	EPA 200.7	EPA200.8	1690			1000		1	1800			1000	300	10	1700			1000	300	10
Selenium	ug/l	EPA 200.8	EPA200.8	0.86			0.8		2	1.9			1	0.5	10	1.4			1	0.5	10
Sodium	ug/l	EPA 200.7	EPA200.8	39700			400		1	43000			1000	300	10	42000			1000	300	10
Strontium	ug/l	EPA 200.7	EPA200.8	491			5		1	560			1	0.3	10	540			1	0.3	10
Organics																					
Diesel Range Organics	mg/l	NM	SW8015M	NM						0.5	U		0.5	0.15	1	0.5	U		0.5	0.15	1
Gasoline Range Organics	ug/l	NM	SW8260_25	NM						100	U		100	30	1	100	U		100	30	1
Dissolved Gases [1]																					
Ethane	ug/l	RSK175 MOD	RSK175	1.6	U		1.6	0.8	1	2	U		2	2	1	2	U		2	2	1
Methane	ug/l	RSK175 MOD	RSK175	0.8	U		0.8	0.4	1	1	U		1	1	1	1	U		1	1	1
Propane	ug/l	RSK175 MOD	RSK175	18	U		18	9	1	1	U		1	1	1	1	U		1	1	1

WPX BWQ: GV 84-1 COGA Voluntary Subsequent 1 Sampling																					
Station Name				**Federal Redding Spring**						**Federal Redding Spring**						**Federal Redding Spring**					
Facility ID				**753083**						**753083**						**753083**					
Sample Date				**12/6/2012 (Baseline)**						**1/14/2014 (Subsequent 1)**						**1/14/2014 (Subsequent 1)**					
Field Sample ID				**SPRING2**						**Redding Spg**						**Spg GV 84-1 [a]**					
Lab Sample ID				**D41639-2**						**1401147-2**						**1401148-1**					
Sampling Agency				**Olsson Associates**						**Western Water & Land, Inc.**						**Western Water & Land, Inc.**					
	Reporting Units	**AMS Analytic Method**	**ALS Analytic Method**	**Result**	**Lab Qual**	**WWL Qual**	**RL**	**MDL**	**DF**	**Result**	**Lab Qual**	**WWL Qual**	**RL**	**MDL**	**DF**	**Result**	**Lab Qual**	**WWL Qual**	**RL**	**MDL**	**DF**
VOCs																					
Benzene	ug/l	SW846 8260B	SW8260_25	1	U		1	0.27	1	1	U		1	0.3	1	1	U		1	0.3	1
Ethylbenzene	ug/l	SW846 8260B	SW8260_25	2	U		2	0.33	1	1	U		1	0.3	1	1	U		1	0.3	1
M+P-Xylene	ug/l	NM	SW8260_25	NM						1	U		1	0.3	1	1	U		1	0.3	1
o-Xylene	ug/l	NM	SW8260_25	NM						1	U		1	0.3	1	1	U		1	0.3	1
Toluene	ug/l	SW846 8260B	SW8260_25	2	U		2	1	1	1	U		1	0.3	1	1	U		1	0.3	1
Xylenes (Total)	ug/l	SW846 8260B	SW8260_25	3	U		3	2	1	1	U		1		1	1	U		1		1
Bacteria																					
Iron Related Bacteria	nu	NM	BART	NM						1			1		1	1			1		1
Slime forming bacteria	nu	NM	BART	NM						1			1		1	1			1		1
Sulfate Reducing Bacteria	nu	NM	BART	NM						1			1		1	1			1		1
Field_Parameters																					
Bubbles	nu	Field	Field	None						None					1	None					1
Color	nu	Field	Field	Clear						Clear					1	Clear					1
Conductivity, Field	uS/cm	Field	Field	NM						335.6					1	335.6					1
Discharge, measured	gpm	Field	Field	NM						5.3		AV			1	5.3		AV			1
Dissolved Oxygen, Field	mg/l	Field	Field	9.47						7.02					1	7.02					1
Dissolved Oxygen, Field,%	%	Field	Field	91.6						51.6					1	51.6					1
Effervescence	nu	Field	Field	None						None					1	None					1
Odor	nu	Field	Field	None						None					1	None					1
ORP, field	mv	Field	Field	NM						206.5					1	206.5					1
pH, Field	s.u.	Field	Field	8.49						7.46					1	7.46					1
Sediment	nu	Field	Field	None						Moderate					1	Moderate					1
Specific Conductivity, Field	uS/cm	Field	Field	603						590.1					1	590.1					1
Temperature, Water	Deg C	Field	Field	5.68						2.4					1	2.4					1
Turbidity, field	NTUs	Field	Field	40.4						6.79		AV			1	6.79		AV			1
VOA Headspace	nu	Field	Field	NM						None					1	None					1

Notes:

[1] AMS units coverted from mg/L to ug/L

[a] Field duplicate

U = not detected at the reporting limit

NM = not measured

J = result between RL and MDL, estimated

H = hold time exceeded

AV = result averaged