



Western Water & Land, Inc.

October 2, 2013

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

RE: GM 323-28 Drill Pad Baseline Results Report, July and August 2013 Event

Dear Mr. Danforth,

Western Water & Land, Inc. (WWL) has completed the initial baseline water sampling for the WPX Energy Rocky Mountain LLC (WPX) GM 323-28 Drill Pad in accordance with Colorado Oil and Gas Conservation Commission (COGCC) Rule 609. The GM 323-28 drill pad is located in NE $\frac{1}{4}$, SW $\frac{1}{4}$ Section 28, Township 6 South, Range 96 West, 6th PM.

In accordance with Rule 609, the baseline water quality evaluation considered all water sources (domestic wells or springs) within a 0.5-mile radius of the referenced drill pad (oil and gas location). A preliminary screening of the groundwater sources was completed to identify the sources that are potentially available for sampling pending the consent of the structure owners. Each potentially available water source was then evaluated to identify the preferred sources for the baseline program. If the number of potentially available sources was four or less, all of the sources were included in the list of preferred sources. If more than four sources were potentially available, the sources were prioritized based on WWL's hydrologic expertise and in accordance with Rule 609. A complete description of the water source evaluation process and results are provided in the water source evaluation report (Baseline Water Quality Sampling Evaluation – GM 323-28 Drill Pad, May 17, 2013).

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

FIELD SAMPLING ACTIVITIES

As described in the Baseline Water Quality Sampling Evaluation – GM 323-28 Drill Pad, May 17, 2013, four potential sampling locations were identified for field sampling of water quality consistent with requirements of Rule 609. According to state records, the landowners, water well permit holders or water right holders were mailed access request letters by way of certified U.S. Postal Service mail. Four wells were identified as preferred sampling locations:

- Water Well Permit No. 151879,
- Water Well Permit No. 278414 (PDC Field Well B),
- Water Well Permit No. 185334 (Puckett Livestock Well No. 1), and

- Union 76 Water Well No. 6.

WPX was granted permission to sample Water Well Permit No. 151879 and Water Well Permit No. 185334 (Puckett Livestock Well No. 1).

Two samples and a duplicate sample were collected for the GM 323-28 Drill Pad. Sample GM 323-28-151879 and sample GM 323-28-172632 (duplicate sample) were collected from Water Well Permit No. 151879 on July 2nd, 2013, and sample GM 11-28-185334 was collected from Water Well Permit No. 185334 (Puckett Livestock Well No. 1) on August 8th, 2013. Sample GM 11-28-185334 met the 0.5-mile radius criteria under Rule 609 for Drill Pad GM 11-28 and Drill Pad GM 323-28. Upon arrival to the Puckett Land Company property, WWL personnel spoke with the property manager Mr. Craig Kohles and located a sampling location for Water Well Permit No. 151879. Water Well Permit No. 185334 (Puckett Livestock Well No. 1) was not functioning during the initial field sampling visit; WWL returned to sample the well on August 8th, 2013 after the pump was repaired. See Figure 1 for the sampled locations. Photographs of the sampling sites are shown in Attachment A.

All sampling procedures followed the COGCC Model Sampling and Analysis Plan (SAP) protocols. Sampling Method 1 for wells with pumps and effervescent samples, described in Version 1 of the COGCC Model SAP, was used to collect these samples.

Samples were carefully packed in plastic ice chests (coolers) with ice and shipped to the analytical laboratory (ALS Laboratory, Fort Collins, Colorado) by way of overnight courier (FedEx Ground).

QUALITY CONTROL

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

Field Procedures

WWL conducted field sampling procedures in accordance with the COGCC Model SAP. Sample GM 323-28-151879 (Water Well Permit No. 151879), sample GM 323-28-172632 (duplicate sample, Water Well Permit No. 151879), and sample GM 11-28-185334 (Water Well Permit No. 185334) were collected by direct filling methods; dissolved gas sampling was done using Method 1 for wells with pumps and effervescent samples. No field procedure deviations or incidents occurred that were cause for data qualification.

COC

The chain-of-custody form was reviewed for correct and complete sample IDs, requested analysis, and other information. The analytes requested on the COC matched the requirements of Rule 609. DRO (diesel range organics) and GRO (gasoline range organics) were designated on the COC in place of TPH, a required analysis for Rule 609. No other errors or pertinent information was observed, and no corrections were needed.

Sample Receipt

The samples collected on July 2nd, 2013 were received in a single cooler within the temperature range criteria ($4^{\circ}\text{C} \pm 2^{\circ}\text{C}$). Custody seals were intact. The lab receipt form reported headspace bubbles less than green pea size for three VOA vials in sample GM 323-28-151879; the remaining three VOA vials were received with no headspace. No qualifiers were assigned to results based on sample receipt

conditions. Sample GM 11-28-185334 from August 8th, 2013 was received in a single cooler within the temperature range criteria ($4^{\circ}\text{C} \pm 2^{\circ}\text{C}$). Custody seals were intact. The lab reported headspace bubbles less than green pea size in VOA vials for sample GM 11-28-185334. In addition, the receipt form noted trip blanks listed on the COC; however, no trip blanks arrived in shipment. 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 pH and specific conductance for sample GM 11-28-185334. ALS reported in the lab summary narrative that the analyses for pH and specific conductance was performed outside of internal lab holding time of 4 days from sample receipt, but did not designate any qualifiers to the results. WWL has designated an "H" qualifier in the final results for lab pH and specific conductance; these results are considered estimated.

Analytical Methods

The analytical methods used by the laboratory were checked for consistency with the analytical schedule in the SAP or other pertinent documents. Analytical methods were found to be consistent with the following modifications: Total phosphorous was analyzed using Method 365.2. 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.

Detection Limits

Detection limits provided with the analytical results were compared to the original quoted detection limits from the analytical laboratory. Detection limits were as quoted with no deviations observed except as applied to increased dilution factors. All analyzed metals had dilution factors of 10. Chloride had a dilution factor of 10 for all three samples, and sulfate had a dilution factor of 10 for sample GM 11-28-185334. ALS reports samples at the detection limit as "undetected" or "U" rather than reporting results as less than the detection reporting limit, e.g. $< 0.05\mu\text{g/L}$.

Completeness

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

Cation-Anion Balance

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

In general, WWL will assign a qualifier (estimated result) for a CAB equal to or greater than 10 percent, and may assign a qualifier for CAB percentages between 5 and less than 10 percent. The CAB calculations for the samples are as follows:

- GM 323-28-151879: 0.73 %
- GM 323-28-172632 (GM 323-28-151879 duplicate): 1.6 %

- GM 11-28-185334: 2.82 %

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

TDS

The ratio of laboratory-measured TDS versus calculated TDS were computed and ratios greater than 1.20 or less than 0.8 for a sample are cause for a review of major ion reporting errors. No sample results were rejected on the basis of the TDS ratio.

In general, WWL will assign a qualifier (an estimated result) when TDS ratios are 1.5 or greater, and may assign a qualifier for TDS ratios between 1.2 and less than 1.5. The TDS calculations for the samples are as follows:

- GM 323-28-151879: 1.16
- GM 323-28-172632 (GM 323-28-151879 duplicate): 1.17
- GM 11-28-185334: 1.17

No qualifiers were assigned on the basis of the TDS acceptance criteria.

Field Duplicates

Field duplicates evaluate the precision of analytical results for field samples collected for a specific sampling event. Precision is measured using the calculation of the relative percent difference (RPD) using the analytical results from the original investigative sample and the duplicate sample. The qualification criteria were considered an RPD limit of 35 percent. One field duplicate (sample GM 323-28-172632) was collected for well permit number 151879 (sample GM 323-28-151879). No lab RPD values exceeded 20 percent. The results for field turbidity showed an RPD of 87 percent; however, turbidity can be variable with time in groundwater from infrequently pumped wells, and no qualifiers were assigned to turbidity based on RPD results.

Laboratory Quality Control

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

All surrogate recoveries were within the acceptance criteria with the following exception for sample GM 11-28-185334:

Surrogate	QC Sample	Direction
O-terphenyl	MB and LCS/LCSD	High

The sample was non-detected for TEPH/DRO, and all spike recoveries in the batch were within limits. No further action was taken (ALS 2013). All other laboratory quality control standards were met within the established laboratory acceptance criteria.

Accuracy

Accuracy was evaluated as a percent recovery of an analyte in a reference standard or a spiked sample, e.g. matrix spike and matrix spike duplicate. In cases where percent recoveries exceeded the laboratory acceptance criteria, data would be qualified depending on whether the analyte was detected above the method detection limit or not, if the recovery of the associated control sample was acceptable, or if the analyte concentration in the sample was disproportionate to the spike level and that the recovery of the associated control sample was acceptable. No qualifiers were assigned by the laboratory because of percent recoveries exceeding the laboratory acceptance criteria.

Precision

Precision is the measurement of how closely replicate sample constituents agree and is not related to the true value (concentration). Precision is measured using RPD calculations for laboratory duplicate samples. The RPDs were compared to the laboratory acceptance limit of 20 percent. RPDs were not used when the sample concentration was too low (< 10X MDL) for accurate evaluation. No qualifiers were assigned by the laboratory because of RPD values exceeding the laboratory acceptance criteria. Data Quality Review Sheets are presented in Attachment B.

Summary

ALS Laboratories assigned analytical results that were undetected with a "U" qualifier. WWL assigned the qualifier "H" to analytes not meeting holding times; these results are considered estimated. No other quality control qualifiers were assigned to the analytical results by ALS Laboratories and WWL. See Attachment C for individual parameters that were qualified.

ANALYTICAL RESULTS

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

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

Sincerely,



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

Attachments

Figure 1- Sampling Location Map

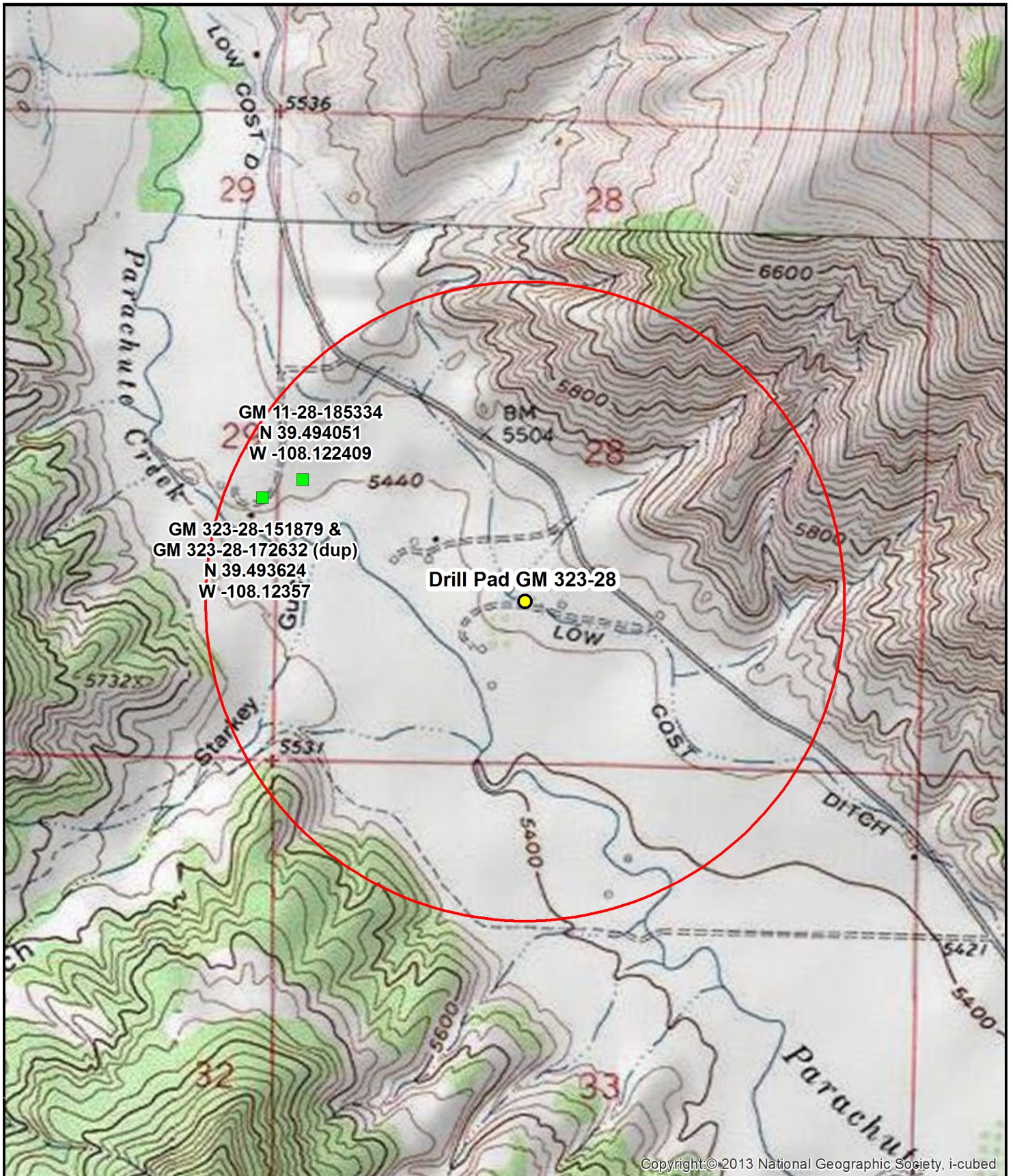
Attachment A - Photographs

Attachment B - Data Quality Review Sheets

Attachment C - Summary of Analytical Results

Attachment D - Field Monitoring Forms

Attachment E - Laboratory Analytical Summary Report



Legend

- Sample Location(s)
- Drill Pad GM 323-28
- 0.5-Mile Radius Evaluation Area

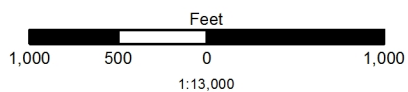


Figure 1: Drill Pad Location GM 323-28
0.5 Mile Radius Water Source Evaluation
NE1/4, SW1/4, S28, T6S, R96W, 6 PM

Garfield County, Colorado

WPX Energy Rocky Mountain LLC

Basemap Source: Bing Maps and Esri ArcGIS Online



Western Water & Land, Inc.
 Applications in Earth Science

ATTACHMENT A

Photographs



Photo 1. Puckett Well Sampling Location (GM 323-28-151879 & 172632-dup)



Photo 2. Puckett Well Sampling Location (GM 323-28-151879 & 172632-dup); Point Before Softener



Photo 3. Puckett Well (GM 323-28-151879 & 172632-dup); Well Piped to House



Photo 4. Puckett Well Sampling Location (GM 11-28-185334)



Photo 5. Puckett Well (GM 11-28-185334)



Photo 6. Puckett Well (GM 11-28-185334); Highly Effervescent at Laminar Flow

ATTACHMENT B

Data Quality Review Sheets

DATA QUALITY REVIEW SHEET

Facility ID:	752711	Project:	WPX BWQ
Station Name:	Puckett 151879	Lab Work Order:	1307028
Sample Date:	7/2/2013	QA/QC Review Date:	9/12/2013
Field Sample ID:	GM 323-28-151879	Reviewer:	S. Goodwin, J.Pahler

Field Sampling Data Review	Yes	No	N/A
1. Well properly purged?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Flow rate reduced prior to sampling?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Water quality parameters stable prior to sampling?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Field instruments calibrated properly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Sampling methods performed according to SAP procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Procedures consistent with obtaining a representative sample?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lab Data Report Review			
7. Proper sample custody maintained until laboratory receipt?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Any discrepancies noted on the lab receipt form? <i>If yes, list in the comments section.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. All samples analyzed for the requested analyses?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Proper laboratory methods used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. All sample holding times met?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12. Lab QA samples (e.g., matrix spikes and matrix spike duplicates) collected and analyzed according to lab method and results within method acceptance limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Lab qualifiers for data (other than non-detect)? <i>List in comments.</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
14. Are corrective actions required? <i>If yes, please list actions and dates to be completed by:</i>	<input type="checkbox"/>	<input 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)	0.728	NA	NA	±5%	<input checked="" type="checkbox"/>
Total Dissolved Solids, mg/L (TDS)	996	860	1.16	0.8 – 1.2	<input checked="" type="checkbox"/>
Specific Conductance, µS/cm (SpC)	1284	1311	0.98	0.8 – 1.2	<input checked="" type="checkbox"/>

Comments:

One small bubble in one VOA vial during sample collection, but sample arrived with headspace bubbles less than green pea size. Chloride dilution factor increased to 10 due to high concentrations.

DATA QUALITY REVIEW SHEET

Facility ID:	752711	Project:	WPX BWQ
Station Name:	Puckett 151879	Lab Work Order:	1307028-2
Sample Date:	7/2/2013	QA/QC Review Date:	9/12/2013
Field Sample ID:	GM 323-28-172632	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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Water quality parameters stable prior to sampling?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Field instruments calibrated properly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Sampling methods performed according to SAP procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Procedures consistent with obtaining a representative sample?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lab Data Report Review			
7. Proper sample custody maintained until laboratory receipt?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Any discrepancies noted on the lab receipt form? <i>If yes, list in the comments section.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. All samples analyzed for the requested analyses?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Proper laboratory methods used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. All sample holding times met?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12. Lab QA samples (e.g., matrix spikes and matrix spike duplicates) collected and analyzed according to lab method and results within method acceptance limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Lab qualifiers for data (other than non-detect)? <i>List in comments.</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
14. Are corrective actions required? <i>If yes, please list actions and dates to be completed by:</i>	<input type="checkbox"/>	<input 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)	1.645	NA	NA	±5%	<input checked="" type="checkbox"/>
Total Dissolved Solids, mg/L (TDS)	996	850	1.16	0.8 – 1.2	<input checked="" type="checkbox"/>
Specific Conductance, µS/cm (SpC)	1269	1307	0.97	0.8 – 1.2	<input checked="" type="checkbox"/>

Comments:

Sample is duplicate of GM 323-28-151879. No effervescence noted during field sampling. Sample arrived with headspace bubbles less than green pea size. Chloride dilution factor increased to 10 due to high concentration.

DATA QUALITY REVIEW SHEET

Facility ID:	752711	Project:	WPX BWQ
Station Name:	Puckett 185334	Lab Work Order:	1308154
Sample Date:	8/8/2013	QA/QC Review Date:	9/13/2013
Field Sample ID:	GM 11-28-185334	Reviewer:	S. Goodwin, J. Pahler

Field Sampling Data Review	Yes	No	N/A
1. Well properly purged?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Flow rate reduced prior to sampling?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Water quality parameters stable prior to sampling?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Field instruments calibrated properly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Sampling methods performed according to SAP procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Procedures consistent with obtaining a representative sample?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lab Data Report Review			
7. Proper sample custody maintained until laboratory receipt?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Any discrepancies noted on the lab receipt form? <i>If yes, list in the comments section.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. All samples analyzed for the requested analyses?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Proper laboratory methods used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. All sample holding times met?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12. Lab QA samples (e.g., matrix spikes and matrix spike duplicates) collected and analyzed according to lab method and results within method acceptance limits?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
13. Lab qualifiers for data (other than non-detect)? <i>List in comments.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Are corrective actions required? <i>If yes, please list actions and dates to be completed by:</i>	<input type="checkbox"/>	<input 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)	2.82	2.7	1.04	±5%	<input checked="" type="checkbox"/>
Total Dissolved Solids, mg/L (TDS)	963	820	1.17	0.8 – 1.2	<input checked="" type="checkbox"/>
Specific Conductance, µS/cm (SpC)	1224	1249	0.98	0.8 – 1.2	<input checked="" type="checkbox"/>

Comments:

Field sample had strong effervescence and small bubble headspace in VOA vials. Sample arrived with headspace bubbles less than green pea size. Receipt form noted the COC listed trip blanks in the cooler however no trip blanks arrived in shipment. Hold times for pH, specific conductance, and DRO exceeded by 1 day. WWL designated an "H" qualifier to lab pH and specific conductance. Dissolved gas sample had pH > 2 at time of analysis. Chloride and sulfate had increased dilution factors of 10 due to high concentrations. Method blank below MDL for DRO. MB, LCS, and LCSD surrogate recovery exceeded upper recovery limits by 6%, 3%, and 12% respectively.

ATTACHMENT C

Summary of Analytical Results

GM 323-28 BWQ Analytical Results Summary																											
Station Name			Puckett 151879						Puckett 151879						Puckett 185334						Trip Blank						
Facility ID			752711						752711						752722						752711						
Field Sample ID			GM 323-28-151879						GM 323-28-172632 ²						GM 11-28-185334						Trip Blank						
Sample Date			7/2/2013 11:00						7/2/2013 11:50						8/8/2013 11:00						7/2/2013 0:00						
Lab Sample ID			1307028-1						1307028-2						1308154-1						1307028-3						
	Reporting Units	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	Result	Lab Qual	WWL Qual	RL	MDL	DF	
Bacteria¹																											
Iron Related Bacteria	nu	BART	1					1	1					1	1			1		1							
Slime forming bacteria	nu	BART	1					1	1					1	1			1		1							
Sulfate Reducing Bacteria	nu	BART	1					1	1					1	1			1		1							
Dissolved Gases																											
Ethane	ug/l	RSK175	2	U		2	2	1	2	U		2	2	1	2	U		2	2	1							
Methane	ug/l	RSK175	18			1	1	1	22			1	1	1	1	U		1	1	1							
Propane	ug/l	RSK175	1	U		1	1	1	1	U		1	1	1	1	U		1	1	1							
Dissolved Metals																											
Barium	ug/l	EPA200.8	47			1	0.3	10	46			1	0.3	10	27			1	0.3	10							
Boron	ug/l	EPA200.8	170			50	15	10	170			50	15	10	180			50	15	10							
Calcium	ug/l	EPA200.8	120000			1000	65	10	110000			1000	65	10	120000			1000	65	10							
Iron	ug/l	EPA200.8	100	U		100	30	10	100	U		100	30	10	100	U		100	30	10							
Magnesium	ug/l	EPA200.8	53000			100	30	10	53000			100	30	10	47000			100	30	10							
Manganese	ug/l	EPA200.8	53			2	0.6	10	52			2	0.6	10	100			2	0.6	10							
Potassium	ug/l	EPA200.8	7700			1000	300	10	7700			1000	300	10	5800			1000	300	10							
Selenium	ug/l	EPA200.8	8			1	0.5	10	7.7			1	0.5	10	2.5			1	0.5	10							
Sodium	ug/l	EPA200.8	100000			1000	300	10	100000			1000	300	10	110000			1000	300	10							
Strontium	ug/l	EPA200.8	1600			1	0.3	10	1600			1	0.3	10	1500			1	0.3	10							
Field_Parameters																											
Bubbles	nu	Field	Low					1	None					1	Low					1							
Color	None	Field	NM					1	NM					1	Clear												
Conductivity, Field	uS/cm	Field	1046					1	1038					1	1099					1							
Depth to Water	ft	Field	NM					1	NM					1	26.99					1							
Discharge, measured	gpm	Field	5.2					1	NM					1	12.4					1							
Dissolved Oxygen, Field	mg/l	Field	2.43					1	1.74					1	1.15					1							
Dissolved Oxygen, Field,%	%	Field	23.7					1	16.9					1	12.4					1							
Effervescence	nu	Field	None					1	None					1	Strong					1							
Odor	nu	Field	None					1	None					1	None					1							
ORP, field	mv	Field	NM					1	81.3					1	61.1					1							
pH, Field	s.u.	Field	7.16					1	7.11					1	7.3					1							
Specific Conductivity, Field	uS/cm	Field	1312					1	1317					1	1265					1							
Temperature, Water	Deg C	Field	14.4					1	13.9					1	18					1							
Turbidity, field	NTUs	Field	8.53					1	3.37					1	8.46		Q			1							

GM 323-28 BWQ Analytical Results Summary																												
Station Name			Puckett 151879						Puckett 151879						Puckett 185334						Trip Blank							
Facility ID			752711						752711						752722						752711							
Field Sample ID			GM 323-28-151879						GM 323-28-172632 ²						GM 11-28-185334						Trip Blank							
Sample Date			7/2/2013 11:00						7/2/2013 11:50						8/8/2013 11:00						7/2/2013 0:00							
Lab Sample ID			1307028-1						1307028-2						1308154-1						1307028-3							
	Reporting Units	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	Result	Lab Qual	WWL Qual	RL	MDL	DF		
Inorganics																												
Alkalinity AS CaCO3, Total	mg/l	SM2320B	500			20		1	510			20		1	450			20		1								
Alkalinity, Bicarbonate as CaCO3	mg/l	SM2320B	500			20		1	510			20		1	450			20		1								
Alkalinity, Carbonate as CaCO3	mg/l	SM2320B	20	U		20		1	20	U		20		1	20	U		20		1								
Bromide	mg/l	EPA300.0	0.21			0.2	0.06	1	0.2	U		0.2	0.06	1	0.2	U		0.2	0.06	1								
Chloride	mg/l	EPA300.0	31			2	0.6	10	31			2	0.6	10	27			2	0.6	10								
Fluoride	mg/l	EPA300.0	1.6			0.1	0.03	1	1.6			0.1	0.03	1	1.6			0.1	0.03	1								
Nitrate as N	mg/l	EPA300.0	0.91			0.2	0.06	1	0.89			0.2	0.06	1	0.28			0.2	0.06	1								
Nitrite as N	mg/l	EPA300.0	0.1	U		0.1	0.03	1	0.1	U		0.1	0.03	1	0.1	U		0.1	0.03	1								
pH	s.u.	SM4500-H	7.45			0.1		1	7.48			0.1		1	7.58		H	0.1		1								
Specific Conductivity	umhos/cm	SM2510B	1311			1		1	1307			1		1	1249		H	1		1								
Sulfate	mg/l	EPA300.0	180			1	0.3	1	180			1	0.3	1	200			10	3	10								
Total Dissolved Solids	mg/l	SM2540C	860			20		1	850			20		1	820			20		1								
Total Phosphorous	mg/l	EPA365.2	0.05	U		0.05	0.015	1	0.05	U		0.05	0.015	1	0.05	U		0.05	0.015	1								
Organics																												
Diesel Range Organics	mg/l	SW8015M	0.5	U		0.5	0.15	1	0.5	U		0.5	0.15	1	0.5	U		0.5	0.15	1								
Gasoline Range Organics	ug/l	SW8260_25	100	U		100	30	1	100	U		100	30	1	100	U		100	30	1	100	U		100	30	1		
VOAs																												
Benzene	ug/l	SW8260_25	1	U		1	0.3	1	1	U		1	0.3	1	1	U		1	0.3	1	1	U		1	0.3	1		
Ethylbenzene	ug/l	SW8260_25	1	U		1	0.3	1	1	U		1	0.3	1	1	U		1	0.3	1	1	U		1	0.3	1		
m+p-Xylene	ug/l	SW8260_25	1	U		1	0.3	1	1	U		1	0.3	1	1	U		1	0.3	1	1	U		1	0.3	1		
o-Xylene	ug/l	SW8260_25	1	U		1	0.3	1	1	U		1	0.3	1	1	U		1	0.3	1	1	U		1	0.3	1		
Toluene	ug/l	SW8260_25	1	U		1	0.3	1	1	U		1	0.3	1	1	U		1	0.3	1	1	U		1	0.3	1		

Notes:

NM = Not measured

Q = uncertain value; equipment calibration failure

U = not detected at the reporting limit

H = estimated, analyzed out of holding time

¹ A result of 1 indicates the presence of bacteria

² GM 323-28-151879 Duplicate

ATTACHMENT D

Field Monitoring Forms

WPX BWQ Groundwater Monitoring Field Form

Project Information			
Project:	GM 11-28 BWQ	Sample Purpose:	Baseline
Site Name (Well Pad):	GM 11-28	Site API:	N/A
Station Name:	Puckett 185334	Sample Date:	8-8-13
COGCC Facility ID:	752 722	Start Time:	0940
Field Sample ID:	GM11-28-185334	End Time:	1215
Landowner Name:	Puckett Land Company	Sample Time:	1100
Landowner Address:	N/A	Sample Team:	SLG, NWS
Water Right/Well Owner:	Puckett Land Company	Observer:	NICK
Water Right/Well Permit:	185334	Lead Signature/Date:	MRS 8-12-13
Receipt Number:	0380479		

Station Information			
Station Description: hose bib pized ~ 200 yds from well			
Approximate Distance to Well Pad: 1,000 ft			
Station Type: <u>Well</u> / Spring / Seep / Other:		Water Use: Domestic / Irrigation / <u>LIVESTOCK</u>	
Sampling Location: Kitchen Tap / Pipe / Well House / <u>Hose bib</u> / Other:			
GPS Location: Zone 12S x 6747456 y 4375554 z 5458'			
Total Depth (ft):	120	Static Depth to Water (ft):	2699
Purge Volume (gal)	total = 517 gal before sample		Well diameter (in): 5

Weather Conditions	
Sky: Clear / Scattered / Cloudy / <u>Overcast</u>	Estimated Air Temp (deg F): 65-70°
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: 0

Field Measurements							
Parameter	Units	Reading	Time	Flag Code	Instrument	In-situ or Container	Comments
Water Temp	deg C	18.0	1153		YSI	C	
pH	s.u.	7.30	1153		YSI	C	
Sp. Conductivity	uS/cm	1265	1153		YSI	C	
Conductivity	uS/cm	1099	1153		YSI	C	
DO Saturation	%	12.4	1153		YSI	C	
DO	mg/L	1.15	1153		YSI	C	
Baro Press	mmHg	626.8	1153		YSI	C	
ORP	RmV	61.1	1153		YSI	C	
Turbidity	NTU	8.46*	1153	AV, Q			8.57, 8.42, 8.2*
Discharge	gpm	12.4	1153		measured	C	
H2S	mg/L	NM	—				
Color: <u>Clear</u> / White / Yellow / Brown / Green / Blue / Other <u>Light</u> / Med / Dark							
Odor: <u>None</u> / Mild / Mod / Strong							
Effervescence: None / Mild / Mod / <u>Strong</u>				Bubbles: None / <u>Low</u> / Mod / High			
Sediment: <u>None</u> / Light / Mod / Heavy				VOA Headspace: None / <u>≤ Pea Size</u> / ≥ Pea Size			
Lab Analysis: <u>Rule 609</u> / COA 9 / COA 22 / Other							
Field Filtered: Yes / <u>No</u>		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 Groundwater Monitoring Field Form

Landowner Comments on water quality:

Had the well ~~operated~~ ^{serviced} recently, pump has been properly functioning for a couple of days, doesn't know anything about quality of water.

Additional information:

Turbidimeter: unable to calibrate correctly - kept giving a cal error. Plan to take a sample back to WWL office + read value there.

* took turbidity measurement, although it would not calibrate (above)

ORP would not stabilize. Got DO to stabilize + every thing else (turbidity exception), made the call to sample after purging ~5.7 gallons. Water level = 27.68

Parameters read very different from last purge to end sample time. Compared 3x, all read similar.

Calibration Information			Date: 8-8-13			Location: Permit no. 185334		
Instrument	Parameter	Units	Time	Calibration Standard Value	Calibration Standard Temp (°C)	Instrument Reading of Standard	Adjusted Reading	Comments
YSI Pro	pH	s.u.	0906	7.00	21.0	6.91		
YSI Pro	pH	s.u.	0909	10.01	20.8	9.93		
YSI Pro	pH	s.u.	0913	4.01	20.6	3.97	4.00	
YSI Pro	SpC	uS/cm	0902	8974	21.4	9148	8977	
	SpC	uS/cm						Not calibrated
YSI Pro	DO	%	0922		18.5	85.4%		12.618 mmHg
	DO	%						Not calibrated
	ORP	RmV						Not calibrated
MicroTPI	Turbidity	NTU						See comment above

in office NTU w/ MicroTPI

NTU: 7.24, 7.40, 7.59

Avg: 7.41

Groundwater Monitoring Field Form

Facility/Site: <u>GM 323-28</u>	Date: <u>7-2-13</u>	Observer: <u>Shelby</u>
Station/Well: <u>GM 323-28-105534</u>	Start Time: <u>1020</u>	Sampling
Location: <u>Parachute Creek</u>	End Time: <u>1130</u>	Team: <u>NWS SLG</u>
Description: <u>at house inside house sampled</u>		Lead Signature: <u>[Signature]</u>
Project: <u>WPX BWQ</u>		Date: <u>7 / 31 / 13</u>
Sampling Instruments: <u>YSI Pro</u>		

Well Purging Information

Well Depth (d_t): _____ ft Static depth to water (d_w): _____ ft Sample/Set Depth: _____ ft
 Bore radius (r_w): _____ in/ft Bore volume (π r²(d_t-d_w)): _____ ft³/gal Casing radius (r_c): _____ in/ft
 Casing volume (π r²(d_t-d_w)(7.48): _____ gal Total volume: _____ ft³/gal Total x 3: _____ ft³/gal

Purge #	Time	Temp (°C)	pH (s.u.)	SpC/Cond (mS/cm, μS/cm)	DO (mg/L, %)	ORP (rmV)	Turb. (NTU)	Water Clarity (poor/mod/good)	Volume Purged (Gallons)	Cumulative Volume Purged (Gallons)
N/A, house well, did not purge										

Field Measurements at Time of Sampling

Parameter	Reading	Time	Measurement (In situ/Container)	Instrument	Comments
Air Temp °C				Thermometer	
Water Temp °C	14.4	1125	C	pHCon10, YSI	
pH (s.u.)	7.16	1125	C	pHCon10/YSI	
SpC/Conductivity (mS/cm, μS/cm)	1312 / 1044	1125	C	pHCon10/YSI	
ORP (rmV)	88.1	1125	C	pH310/YSI	
DO (mg/L, %)	2.43 / 23.7%	1125	C	DO310/YSI	627.8 mmHg
Turbidity (NTU)	8.53	1125	C	MicroTPI	9.55, 7.06
Discharge (ft ³ /s, L/s, gpm)	5.20 GPM	1125	C	Flow meter/ bucket/estimate	
Water Characteristics: Odor: <u>None</u> /Low/Mod/High		Bubbles: <u>None</u> /Low/Mod/High			
Sediment: <u>None</u> /Low/Mod/High		Effervescence: <u>None</u> /Low/Mod/High			
VOA Headspace: <u>None</u> /Low/Mod/High		Other: <u>1 small bubble VOA 6/20</u>			
Number and type of filters used: _____				Sampling Time: <u>1110</u>	
GPS Coordinates: <u>UTM: 4375508, 747355</u>				<u>elev. 5307</u>	

Groundwater Monitoring Field Form

Instrument Calibration Information						
Parameter	Date Time of Calibration	Temperature Calibration Standard	Calibration Standard Value	Instrument Reading of Standard	Adjusted Reading	Other Information
pH (s. u.)	0815	23.5	4.01	4.02		
pH (s. u.)	0818	23.5	7.00	6.93		
pH (s. u.)	0821	23.5	10.01	9.98	10.04	
Sp. Conductivity ($\mu\text{S}/\text{cm}$, mS/cm)	0800	23.5	2070	2064	2070	(@ 25 °C) =
Sp. Conductivity ($\mu\text{S}/\text{cm}$, mS/cm)	0803	23.6	8974	too far off		(@ 25 °C) =
DO (mg/L, %)	0824	23.2		83.8%		642.8 mmHg
DO (mg/L, %)						
ORP (mV)						
Turbidity (n.t.u)						

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

Field Notes:

~~Softener cannot be bypassed~~ → found a way to bypass
Well used regularly, purging not necessary

Weather: SKY- clear scattered / broken / cloudy / overcast. PRECIP- none / light / mod. / heavy / snow / rain
WIND- calm / breeze / gusty / moderate / strong / est. wind speed/direction: _____ / _____
TEMP- cold / cool / mild / warm (hot) / est. air temperature: 81°F Comments: _____

Discharge: 1 - 3.5 gal / 46.355

Duplicate ID: GM323-28-172632

Groundwater Monitoring Field Form

Calibration info on GM 323-28-151879

Instrument Calibration Information						
Parameter	Date <u>7-2</u> Time of Calibration	Temperature Calibration Standard	Calibration Standard Value	Instrument Reading of Standard	Adjusted Reading	Other Information
pH (s. u.)						
pH (s. u.)						
pH (s. u.)						
Sp. Conductivity (μ S/cm, mS/cm)						(@ 25 °C) =
Sp. Conductivity (μ S/cm, mS/cm)						(@ 25 °C) =
DO (mg/L, %)						
DO (mg/L, %)						
ORP (mV)						
Turbidity (n.t.u)						

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

Field Notes:

Duplicate for GM323-28-151879	
Weather: SKY- clear / scattered / broken / cloudy / overcast. PRECIP- none / light / mod. / heavy / snow / rain	
WIND- calm / breeze / gusty / moderate / strong / est. wind speed/direction: _____ / _____	
TEMP- cold / cool / mild / warm (hot) / est. air temperature: 81°F Comments: _____	

ATTACHMENT E

Laboratory Analytical Summary Report



1307028

GC/MS Volatiles:

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

All acceptance criteria were met.

Dissolved Gasses:

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

All acceptance criteria were met.:

DRO:

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

All acceptance criteria were met.

BART:

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

Metals:

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

All acceptance criteria were met.



Inorganics:

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

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

CCB4 was above the reporting limit for fluoride. The samples bracketed by this CCB contained more than ten times the concentration of fluoride that was detected in the CCB.

All remaining acceptance criteria were met.

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Sample Number(s) Cross-Reference Table

OrderNum: 1307028

Client Name: Western Water and Land, Inc.

Client Project Name: WPX Baseline Water Quality

Client Project Number: GM 323-28

Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
GM 323-28-151879	1307028-1		WATER	02-Jul-13	11:10
GM 323-28-172632	1307028-2		WATER	02-Jul-13	14:10
Trip Blank	1307028-3		WATER	02-Jul-13	

1307028

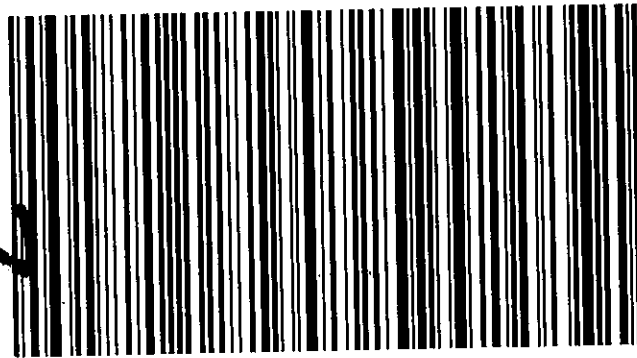
1125

FedEx Relabel

Ground

DENV-802¹⁰

12-21



TRK# 9622 0417 3 (000 045 7800 7) 00 7957 9518 5272
(IC AUTODIM)

3.4°C

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: Western Water and Land, Inc.
 Project: GM 323-28 WPX Baseline Water Quality
 Sample ID: GM 323-28-151879
 Legal Location:
 Collection Date: 7/2/2013 11:10

Date: 02-Aug-13
 Work Order: 1307028
 Lab ID: 1307028-1
 Matrix: WATER
 Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALKALINITY AS CALCIUM CARBONATE			SM2320B		Prep Date: 7/8/2013	PrepBy: AJD
BICARBONATE AS CaCO3	500		20	MG/L	1	7/8/2013
CARBONATE AS CaCO3	ND		20	MG/L	1	7/8/2013
TOTAL ALKALINITY AS CaCO3	500		20	MG/L	1	7/8/2013
BIOLOGICAL ACTIVITY REACTION TEST			BART		Prep Date: 7/8/2013	PrepBy: BAS
IRON RELATED BACTERIA	1			NU	1	7/16/2013
SLIME FORMING BACTERIA	1			NU	1	7/16/2013
SULFATE REDUCING BACTERIA	1			NU	1	7/16/2013
DIESEL RANGE ORGANICS			SW8015M		Prep Date: 7/9/2013	PrepBy: KLR
Diesel Range Organics	ND		0.5	MG/L	1	7/9/2013 16:28
Surr: O-TERPHENYL	72		51-97	%REC	1	7/9/2013 16:28
DISSOLVED GASSES			RSK175		Prep Date: 7/8/2013	PrepBy: JFN
METHANE	18		1	UG/L	1	7/8/2013 12:00
ETHANE	ND		2	UG/L	1	7/8/2013 12:00
PROPANE	ND		1	UG/L	1	7/8/2013 12:00
GC/MS VOLATILES			SW8260_25		Prep Date: 7/9/2013	PrepBy: SDW
BENZENE	ND		1	UG/L	1	7/9/2013 13:54
TOLUENE	ND		1	UG/L	1	7/9/2013 13:54
ETHYLBENZENE	ND		1	UG/L	1	7/9/2013 13:54
M+P-XYLENE	ND		1	UG/L	1	7/9/2013 13:54
O-XYLENE	ND		1	UG/L	1	7/9/2013 13:54
GASOLINE RANGE ORGANICS	ND		100	UG/L	1	7/9/2013 13:54
Surr: DIBROMOFLUOROMETHANE	103		84-118	%REC	1	7/9/2013 13:54
Surr: TOLUENE-D8	99		85-115	%REC	1	7/9/2013 13:54
Surr: 4-BROMOFLUOROBENZENE	99		85-115	%REC	1	7/9/2013 13:54
ION CHROMATOGRAPHY			EPA300.0		Prep Date: 7/3/2013	PrepBy: AJD
BROMIDE	0.21		0.2	MG/L	1	7/3/2013 17:58
CHLORIDE	31		2	MG/L	10	7/3/2013 18:26
FLUORIDE	1.6		0.1	MG/L	1	7/3/2013 17:58
NITRATE AS N	0.91		0.2	MG/L	1	7/3/2013 17:58
NITRITE AS N	ND		0.1	MG/L	1	7/3/2013 17:58
SULFATE	180		1	MG/L	1	7/3/2013 17:58
METALS BY 200.8			EPA200.8		Prep Date: 7/9/2013	PrepBy: BAS
BORON	170		50	UG/L	10	7/10/2013 12:25
BARIUM	47		1	UG/L	10	7/10/2013 12:25
CALCIUM	120000		1000	UG/L	10	7/10/2013 12:25
IRON	ND		100	UG/L	10	7/10/2013 12:25
POTASSIUM	7700		1000	UG/L	10	7/10/2013 12:25
MAGNESIUM	53000		100	UG/L	10	7/10/2013 12:25
MANGANESE	53		2	UG/L	10	7/10/2013 12:25
SODIUM	100000		1000	UG/L	10	7/10/2013 12:25

Client: Western Water and Land, Inc.
Project: GM 323-28 WPX Baseline Water Quality
Sample ID: GM 323-28-151879
Legal Location:
Collection Date: 7/2/2013 11:10

Date: 02-Aug-13
Work Order: 1307028
Lab ID: 1307028-1
Matrix: WATER
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
SELENIUM	8		1	UG/L	10	7/10/2013 12:25
STRONTIUM	1600		1	UG/L	10	7/10/2013 12:25
PH			SM4500-H		Prep Date: 7/5/2013	PrepBy: AJD
PH	7.45		0.1	pH	1	7/5/2013
SPECIFIC CONDUCTANCE IN WATER			SM2510B		Prep Date: 7/5/2013	PrepBy: AJD
SPECIFIC CONDUCTIVITY	1311		1	umhos/cm	1	7/5/2013
TOTAL DISSOLVED SOLIDS			SM2540C		Prep Date: 7/5/2013	PrepBy: AJD
TOTAL DISSOLVED SOLIDS	860		20	MG/L	1	7/8/2013
TOTAL PHOSPHORUS AS P			EPA365.2		Prep Date: 7/5/2013	PrepBy: TWK
TOTAL PHOSPHORUS	ND		0.05	MG/L	1	7/5/2013

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SAMPLE SUMMARY REPORT

Client: Western Water and Land, Inc.
 Project: GM 323-28 WPX Baseline Water Quality
 Sample ID: GM 323-28-172632
 Legal Location:
 Collection Date: 7/2/2013 14:10

Date: 02-Aug-13
 Work Order: 1307028
 Lab ID: 1307028-2
 Matrix: WATER
 Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALKALINITY AS CALCIUM CARBONATE			SM2320B		Prep Date: 7/8/2013	PrepBy: AJD
BICARBONATE AS CaCO3	510		20	MG/L	1	7/8/2013
CARBONATE AS CaCO3	ND		20	MG/L	1	7/8/2013
TOTAL ALKALINITY AS CaCO3	510		20	MG/L	1	7/8/2013
BIOLOGICAL ACTIVITY REACTION TEST			BART		Prep Date: 7/9/2013	PrepBy: BAS
IRON RELATED BACTERIA	1			NU	1	7/17/2013
SLIME FORMING BACTERIA	1			NU	1	7/17/2013
SULFATE REDUCING BACTERIA	1			NU	1	7/17/2013
DIESEL RANGE ORGANICS			SW8015M		Prep Date: 7/9/2013	PrepBy: KLR
Diesel Range Organics	ND		0.5	MG/L	1	7/9/2013 15:57
Surr: O-TERPHENYL	75		51-97	%REC	1	7/9/2013 15:57
DISSOLVED GASSES			RSK175		Prep Date: 7/8/2013	PrepBy: JFN
METHANE	22		1	UG/L	1	7/8/2013 12:09
ETHANE	ND		2	UG/L	1	7/8/2013 12:09
PROPANE	ND		1	UG/L	1	7/8/2013 12:09
GC/MS VOLATILES			SW8260_25		Prep Date: 7/9/2013	PrepBy: SDW
BENZENE	ND		1	UG/L	1	7/9/2013 14:18
TOLUENE	ND		1	UG/L	1	7/9/2013 14:18
ETHYLBENZENE	ND		1	UG/L	1	7/9/2013 14:18
M+P-XYLENE	ND		1	UG/L	1	7/9/2013 14:18
O-XYLENE	ND		1	UG/L	1	7/9/2013 14:18
GASOLINE RANGE ORGANICS	ND		100	UG/L	1	7/9/2013 14:18
Surr: DIBROMOFLUOROMETHANE	102		84-118	%REC	1	7/9/2013 14:18
Surr: TOLUENE-D8	100		85-115	%REC	1	7/9/2013 14:18
Surr: 4-BROMOFLUOROBENZENE	97		85-115	%REC	1	7/9/2013 14:18
ION CHROMATOGRAPHY			EPA300.0		Prep Date: 7/3/2013	PrepBy: AJD
BROMIDE	ND		0.2	MG/L	1	7/3/2013 18:12
CHLORIDE	31		2	MG/L	10	7/3/2013 18:40
FLUORIDE	1.6		0.1	MG/L	1	7/3/2013 18:12
NITRATE AS N	0.89		0.2	MG/L	1	7/3/2013 18:12
NITRITE AS N	ND		0.1	MG/L	1	7/3/2013 18:12
SULFATE	180		1	MG/L	1	7/3/2013 18:12
METALS BY 200.8			EPA200.8		Prep Date: 7/9/2013	PrepBy: BAS
BORON	170		50	UG/L	10	7/10/2013 12:28
BARIUM	46		1	UG/L	10	7/10/2013 12:28
CALCIUM	110000		1000	UG/L	10	7/10/2013 12:28
IRON	ND		100	UG/L	10	7/10/2013 12:28
POTASSIUM	7700		1000	UG/L	10	7/10/2013 12:28
MAGNESIUM	53000		100	UG/L	10	7/10/2013 12:28
MANGANESE	52		2	UG/L	10	7/10/2013 12:28
SODIUM	100000		1000	UG/L	10	7/10/2013 12:28

Client: Western Water and Land, Inc.
Project: GM 323-28 WPX Baseline Water Quality
Sample ID: GM 323-28-172632
Legal Location:
Collection Date: 7/2/2013 14:10

Date: 02-Aug-13
Work Order: 1307028
Lab ID: 1307028-2
Matrix: WATER
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
SELENIUM	7.7		1	UG/L	10	7/10/2013 12:28
STRONTIUM	1600		1	UG/L	10	7/10/2013 12:28
PH			SM4500-H		Prep Date: 7/5/2013	PrepBy: AJD
PH	7.48		0.1	pH	1	7/5/2013
SPECIFIC CONDUCTANCE IN WATER			SM2510B		Prep Date: 7/5/2013	PrepBy: AJD
SPECIFIC CONDUCTIVITY	1307		1	umhos/cm	1	7/5/2013
TOTAL DISSOLVED SOLIDS			SM2540C		Prep Date: 7/5/2013	PrepBy: AJD
TOTAL DISSOLVED SOLIDS	850		20	MG/L	1	7/8/2013
TOTAL PHOSPHORUS AS P			EPA365.2		Prep Date: 7/5/2013	PrepBy: TWK
TOTAL PHOSPHORUS	ND		0.05	MG/L	1	7/5/2013

Client: Western Water and Land, Inc.
Project: GM 323-28 WPX Baseline Water Quality
Sample ID: Trip Blank
Legal Location:
Collection Date: 7/2/2013

Date: 02-Aug-13
Work Order: 1307028
Lab ID: 1307028-3
Matrix: WATER
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GC/MS VOLATILES			SW8260_25		Prep Date: 7/9/2013	PrepBy: SDW
BENZENE	ND		1	UG/L	1	7/9/2013 14:41
TOLUENE	ND		1	UG/L	1	7/9/2013 14:41
ETHYLBENZENE	ND		1	UG/L	1	7/9/2013 14:41
M+P-XYLENE	ND		1	UG/L	1	7/9/2013 14:41
O-XYLENE	ND		1	UG/L	1	7/9/2013 14:41
GASOLINE RANGE ORGANICS	ND		100	UG/L	1	7/9/2013 14:41
Surr: DIBROMOFLUOROMETHANE	103		84-118	%REC	1	7/9/2013 14:41
Surr: TOLUENE-D8	101		85-115	%REC	1	7/9/2013 14:41
Surr: 4-BROMOFLUOROBENZENE	99		85-115	%REC	1	7/9/2013 14:41

Client: Western Water and Land, Inc.
Project: GM 323-28 WPX Baseline Water Quality
Sample ID: Trip Blank
Legal Location:
Collection Date: 7/2/2013

Date: 02-Aug-13
Work Order: 1307028
Lab ID: 1307028-3
Matrix: WATER
Percent Moisture:

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

Radiochemistry:

- U or ND - Result is less than the sample specific MDC.
- 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.

Organics:

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

Diesel Range Organics:

Client: Western Water and Land, Inc.
Project: GM 323-28 WPX Baseline Water Quality
Sample ID: Trip Blank
Legal Location:
Collection Date: 7/2/2013

Date: 02-Aug-13
Work Order: 1307028
Lab ID: 1307028-3
Matrix: WATER
Percent Moisture:

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

ALS Environmental -- FC

Date: 8/2/2013 8:06:2

Client: Western Water and Land, Inc.

QC BATCH REPORT

Work Order: 1307028

Project: GM 323-28 WPX Baseline Water Quality

Batch ID: EX130709-1-1 Instrument ID FUELS-1 Method: SW8015M

LCS		Sample ID: EX130709-1			Units: MG/L			Analysis Date: 7/9/2013 14:25		
Client ID:		Run ID: GC130709-1A			Prep Date: 7/9/2013			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
Diesel Range Organics	9.85	0.5	10		98	36-150			20	
Surr: O-TERPHENYL	1.11		1.25		89	51-97				

LCSD		Sample ID: EX130709-1			Units: MG/L			Analysis Date: 7/9/2013 14:56		
Client ID:		Run ID: GC130709-1A			Prep Date: 7/9/2013			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
Diesel Range Organics	9.95	0.5	10		100	36-150	9.85	1	20	
Surr: O-TERPHENYL	1.08		1.25		86	51-97		3		

MB		Sample ID: EX130709-1			Units: MG/L			Analysis Date: 7/9/2013 13:54		
Client ID:		Run ID: GC130709-1A			Prep Date: 7/9/2013			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
Diesel Range Organics	ND	0.5								
Surr: O-TERPHENYL	0.948		1.25		76	51-97				

MS		Sample ID: 1307028-1			Units: MG/L			Analysis Date: 7/9/2013 16:58		
Client ID: GM 323-28-151879		Run ID: GC130709-1A			Prep Date: 7/9/2013			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
Diesel Range Organics	10.2	0.5	10	0.5	102	36-150			20	
Surr: O-TERPHENYL	1.1		1.25		88	51-97				

MSD		Sample ID: 1307028-1			Units: MG/L			Analysis Date: 7/9/2013 17:29		
Client ID: GM 323-28-151879		Run ID: GC130709-1A			Prep Date: 7/9/2013			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
Diesel Range Organics	9.78	0.5	10	0.5	98	36-150	10.2	5	20	
Surr: O-TERPHENYL	1.1		1.25		88	51-97		0		

The following samples were analyzed in this batch: 1307028-1 1307028-2

Client: Western Water and Land, Inc.
 Work Order: 1307028
 Project: GM 323-28 WPX Baseline Water Quality

QC BATCH REPORT

Batch ID: **HC130708-9-1** Instrument ID **MEE-1** Method: **RSK175**

LCS		Sample ID: HC130708-9			Units: UG/L			Analysis Date: 7/8/2013 11:51			
Client ID:		Run ID: HC130708-9A			Prep Date: 7/8/2013			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual	
METHANE	130	1	142		92	80-120			25		
ETHANE	249	2	267		93	80-120			25		
PROPANE	359	1	391		92	80-120			25		

LCSD		Sample ID: HC130708-9			Units: UG/L			Analysis Date: 7/8/2013 12:16			
Client ID:		Run ID: HC130708-9A			Prep Date: 7/8/2013			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual	
METHANE	121	1	142		85	80-120	130	8	25		
ETHANE	229	2	267		86	80-120	249	9	25		
PROPANE	330	1	391		84	80-120	359	9	25		

MB		Sample ID: HC130708-9			Units: UG/L			Analysis Date: 7/8/2013 11:54			
Client ID:		Run ID: HC130708-9A			Prep Date: 7/8/2013			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual	
METHANE	ND	1									
ETHANE	ND	2									
PROPANE	ND	1									

MS		Sample ID: 1307028-1			Units: UG/L			Analysis Date: 7/8/2013 12:03			
Client ID: GM 323-28-151879		Run ID: HC130708-9A			Prep Date: 7/8/2013			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual	
METHANE	143	1	142		18	88	70-130		25		
ETHANE	236	2	267		2	88	70-130		25		
PROPANE	341	1	391		1	87	70-130		25		

MSD		Sample ID: 1307028-1			Units: UG/L			Analysis Date: 7/8/2013 12:06			
Client ID: GM 323-28-151879		Run ID: HC130708-9A			Prep Date: 7/8/2013			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual	
METHANE	148	1	142		18	91	70-130	143	3	25	
ETHANE	245	2	267		2	92	70-130	236	4	25	
PROPANE	354	1	391		1	90	70-130	341	3	25	

The following samples were analyzed in this batch: 1307028-1 1307028-2

Client: Western Water and Land, Inc.
 Work Order: 1307028
 Project: GM 323-28 WPX Baseline Water Quality

QC BATCH REPORT

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

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

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

The following samples were analyzed in this batch: 1307028-1 1307028-2

Client: Western Water and Land, Inc.
 Work Order: 1307028
 Project: GM 323-28 WPX Baseline Water Quality

QC BATCH REPORT

Batch ID: VL130709-4-3 Instrument ID HPV1 Method: SW8260_25

LCS		Sample ID: VL130709-4			Units: UG/L			Analysis Date: 7/9/2013 12:44			
Client ID:		Run ID: VL130709-4A			Prep Date: 7/9/2013			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual	
BENZENE	9.69	1	10		97	83-117			20		
TOLUENE	9.59	1	10		96	82-113			20		
ETHYLBENZENE	9.93	1	10		99	81-113			20		
M+P-XYLENE	20.3	1	20		101	82-115			20		
O-XYLENE	10	1	10		100	81-115			20		
GASOLINE RANGE ORGANICS	458	100	500		91.548	80-120			20		
Surr: DIBROMOFLUOROMETHA	25.3		25		101	84-118					
Surr: TOLUENE-D8	25.3		25		101	85-115					
Surr: 4-BROMOFLUOROBENZE	24.6		25		99	85-115					

LCSD		Sample ID: VL130709-4			Units: UG/L			Analysis Date: 7/9/2013 13:07			
Client ID:		Run ID: VL130709-4A			Prep Date: 7/9/2013			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual	
BENZENE	9.77	1	10		98	83-117	9.69	1	20		
TOLUENE	9.61	1	10		96	82-113	9.59	0	20		
ETHYLBENZENE	9.85	1	10		99	81-113	9.93	1	20		
M+P-XYLENE	20.2	1	20		101	82-115	20.3	0	20		
O-XYLENE	10.1	1	10		101	81-115	10	0	20		
GASOLINE RANGE ORGANICS	473	100	500		94.684	80-120	458		20		
Surr: DIBROMOFLUOROMETHA	26		25		104	84-118		3			
Surr: TOLUENE-D8	25		25		100	85-115		1			
Surr: 4-BROMOFLUOROBENZE	24.9		25		100	85-115		1			

MB		Sample ID: VL130709-4			Units: UG/L			Analysis Date: 7/9/2013 13:31			
Client ID:		Run ID: VL130709-4A			Prep Date: 7/9/2013			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual	
BENZENE	ND	1									
TOLUENE	ND	1									
ETHYLBENZENE	ND	1									
M+P-XYLENE	ND	1									
O-XYLENE	ND	1									
GASOLINE RANGE ORGANICS	ND	100									
Surr: DIBROMOFLUOROMETHA	25.8		25		103	84-118					
Surr: TOLUENE-D8	25.2		25		101	85-115					
Surr: 4-BROMOFLUOROBENZE	24.7		25		99	85-115					

The following samples were analyzed in this batch: 1307028-1 1307028-2 1307028-3

Client: Western Water and Land, Inc.
Work Order: 1307028
Project: GM 323-28 WPX Baseline Water Quality

QC BATCH REPORT

Batch ID: **AK130708-1-2** Instrument ID **NONE** Method: **SM2320B**

LCS		Sample ID: AK130708-1			Units: MG/L			Analysis Date: 7/8/2013		
Client ID:		Run ID: AK130708-1A			Prep Date: 7/8/2013			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL ALKALINITY AS CaCO3	98	5	100		98	85-115			15	

MB		Sample ID: AK130708-1			Units: MG/L			Analysis Date: 7/8/2013		
Client ID:		Run ID: AK130708-1A			Prep Date: 7/8/2013			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
BICARBONATE AS CaCO3	ND	5								
CARBONATE AS CaCO3	ND	5								
TOTAL ALKALINITY AS CaCO3	ND	5								

The following samples were analyzed in this batch:

1307028-1	1307028-2
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Client: Western Water and Land, Inc.
Work Order: 1307028
Project: GM 323-28 WPX Baseline Water Quality

QC BATCH REPORT

Batch ID: **IC130703-1-2** Instrument ID **IC** Method: **EPA300.0**

LCS		Sample ID: IC130703-1			Units: MG/L		Analysis Date: 7/3/2013 11:24			
Client ID:		Run ID: IC130703-1A1			Prep Date: 7/3/2013		DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
FLUORIDE	1.85	0.1	2		93	90-110			15	
CHLORIDE	4.73	0.2	5		95	90-110			15	
NITRITE AS N	1.86	0.1	2		93	90-110			15	
BROMIDE	5.09	0.2	5		102	90-110			15	
NITRATE AS N	4.82	0.2	5		96	90-110			15	
SULFATE	18.4	1	20		92	90-110			15	

MB		Sample ID: IC130703-1			Units: MG/L		Analysis Date: 7/3/2013 12:34			
Client ID:		Run ID: IC130703-1A1			Prep Date: 7/3/2013		DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
FLUORIDE	ND	0.1								
CHLORIDE	ND	0.2								
NITRITE AS N	ND	0.1								
BROMIDE	ND	0.2								
NITRATE AS N	ND	0.2								
SULFATE	ND	1								

The following samples were analyzed in this batch: 1307028-1 1307028-2

Client: Western Water and Land, Inc.
Work Order: 1307028
Project: GM 323-28 WPX Baseline Water Quality

QC BATCH REPORT

Batch ID: **TD130705-1-1** Instrument ID: **Balance** Method: **SM2540C**

DUP		Sample ID: 1307028-1			Units: MG/L			Analysis Date: 7/8/2013		
Client ID: GM 323-28-151879		Run ID: TD130708-1A			Prep Date: 7/5/2013			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	863	20					860	0	5	

LCS		Sample ID: TD130705-1			Units: MG/L			Analysis Date: 7/8/2013		
Client ID:		Run ID: TD130708-1A			Prep Date: 7/5/2013			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	410	20	400		103	85-115			5	

MB		Sample ID: TD130705-1			Units: MG/L			Analysis Date: 7/8/2013		
Client ID:		Run ID: TD130708-1A			Prep Date: 7/5/2013			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	ND	20								

The following samples were analyzed in this batch:

1307028-1	1307028-2
-----------	-----------

Client: Western Water and Land, Inc.
Work Order: 1307028
Project: GM 323-28 WPX Baseline Water Quality

QC BATCH REPORT

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

LCS Sample ID: **TP130705-1** Units: **MG/L** Analysis Date: **7/5/2013**
 Client ID: Run ID: **TP130705-1A** Prep Date: **7/5/2013** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL PHOSPHORUS	0.523	0.05	0.5		105	80-120			20	

MB Sample ID: **TP130705-1** Units: **MG/L** Analysis Date: **7/5/2013**
 Client ID: Run ID: **TP130705-1A** Prep Date: **7/5/2013** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL PHOSPHORUS	ND	0.05								

The following samples were analyzed in this batch: 1307028-1 1307028-2



1308154

GC/MS Volatiles:

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

All acceptance criteria were met.

Dissolved Gasses:

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

All acceptance criteria were met with the following exception:

The sample had a pH > 2 at the time of analysis.

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 surrogate recoveries were within acceptable limits with the following exceptions:

Surrogate	Sample	Direction
O-terphenyl	MB and LCS/LCSD	High

The sample was non-detect for TEPH/DRO. All spike recoveries in the batch were within limits. No further action was taken.

BART:

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



Metals:

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

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

All acceptance criteria were met.

Inorganics:

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

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

The sample was analyzed outside of the established ALS internal holding time for pH and specific conductance.

All remaining acceptance criteria were met.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1308154

Client Name: Western Water and Land, Inc.

Client Project Name: GM 11-28 BWQ

Client Project Number: 30000.01.29

Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
GM 11-28-185334	1308154-1		WATER	08-Aug-13	11:00



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: W. Water

Workorder No: 1308154

Project Manager: ARW

Initials: LAS

Date: 8/13/13

1. Does this project require any special handling in addition to standard ALS procedures?		YES	<input checked="" type="radio"/> NO
2. Are custody seals on shipping containers intact?	NONE	<input checked="" type="radio"/> YES	NO
3. Are Custody seals on sample containers intact?	<input checked="" type="radio"/> NONE	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		<input checked="" type="radio"/> YES	NO
5. Are the COC and bottle labels complete and legible?		<input checked="" type="radio"/> 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	<input checked="" type="radio"/> NO *
7. Were airbills / shipping documents present and/or removable?	DROP OFF	<input checked="" type="radio"/> YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	<input checked="" type="radio"/> YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	N/A	<input checked="" type="radio"/> YES	NO
10. Is there sufficient sample for the requested analyses?		<input checked="" type="radio"/> YES	NO
11. Were all samples placed in the proper containers for the requested analyses?		<input checked="" type="radio"/> YES	NO
12. Are all samples within holding times for the requested analyses?		<input checked="" type="radio"/> YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		<input checked="" type="radio"/> YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: <input checked="" type="checkbox"/> < green pea <input type="checkbox"/> > green pea	N/A	YES	<input checked="" type="radio"/> NO *
15. Do any water samples contain sediment? Amount Amount of sediment: <input type="checkbox"/> dusting <input type="checkbox"/> moderate <input type="checkbox"/> heavy	N/A	YES	<input checked="" type="radio"/> NO
16. Were the samples shipped on ice?		<input checked="" type="radio"/> YES	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: <input checked="" type="radio"/> #2 <input type="radio"/> #4 RAD ONLY		<input checked="" type="radio"/> YES	NO
Cooler #: <u>1</u>			
Temperature (°C): <u>2.0</u>			
No. of custody seals on cooler: <u>2</u>			
External µR/hr reading: <u>13</u>			
Background µR/hr reading: <u>10</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? <input checked="" type="radio"/> 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.

*6 No trip blank bottles arrived in shipment

*14 1308154-1-3 voa } all arrived with headspace
 1-4 gro } ≤ pea-size
 1-5 ↓
 1-6 ↓

If applicable, was the client contacted? YES / NO / NA Contact: Bruce Smith Date/Time: 8/13/13

Project Manager Signature / Date: [Signature] 8/13/13

1308154

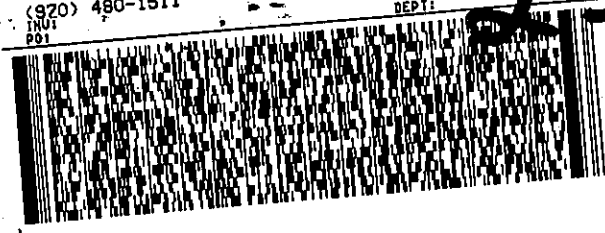
FROM: (970) 242-0170
WESTERN WATER & LAND INC
743 HORIZON CT STE. 330
GRAND JUNCTION CO 81506
US

SHIP DATE: 08AUG13
ACTWGT: 47.0 LB
CAD: 9622/POS1400
DIMMED: 23 X 15 X 15 IN
BILL 3rd PARTY

TO amy wolfe
ALS ENVIRONMENTAL
225 COMMERCE DR
FORT COLLINS CO 80524
(970) 490-1511 REF: DEPT:

13
2

(US)



TRK# 7958 0864 3218

2.0

80524

9622 0417 3 (000 045 7800) 7 00 7958 0864 3218



ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: Western Water and Land, Inc.
 Project: 30000.01.29 GM 11-28 BWQ
 Sample ID: GM 11-28-185334
 Legal Location:
 Collection Date: 8/8/2013 11:00

Date: 22-Aug-13
 Work Order: 1308154
 Lab ID: 1308154-1
 Matrix: WATER
 Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALKALINITY AS CALCIUM CARBONATE			SM2320B		Prep Date: 8/12/2013	PrepBy: AJD
BICARBONATE AS CaCO3	450		20	MG/L	1	8/12/2013
CARBONATE AS CaCO3	ND		20	MG/L	1	8/12/2013
TOTAL ALKALINITY AS CaCO3	450		20	MG/L	1	8/12/2013
BIOLOGICAL ACTIVITY REACTION TEST			BART		Prep Date: 8/12/2013	PrepBy: BAS
IRON RELATED BACTERIA	1		1	NU	1	8/20/2013
SLIME FORMING BACTERIA	1		1	NU	1	8/20/2013
SULFATE REDUCING BACTERIA	1		1	NU	1	8/20/2013
DIESEL RANGE ORGANICS			SW8015M		Prep Date: 8/13/2013	PrepBy: BCH
Diesel Range Organics	ND		0.5	MG/L	1	8/16/2013 11:41
Surr: O-TERPHENYL	89		51-97	%REC	1	8/16/2013 11:41
DISSOLVED GASSES			RSK175		Prep Date: 8/10/2013	PrepBy: JFN
METHANE	ND		1	UG/L	1	8/10/2013 21:55
ETHANE	ND		2	UG/L	1	8/10/2013 21:55
PROPANE	ND		1	UG/L	1	8/10/2013 21:55
GC/MS VOLATILES			SW8260_25		Prep Date: 8/13/2013	PrepBy: SDW
BENZENE	ND		1	UG/L	1	8/13/2013 21:59
TOLUENE	ND		1	UG/L	1	8/13/2013 21:59
ETHYLBENZENE	ND		1	UG/L	1	8/13/2013 21:59
M+P-XYLENE	ND		1	UG/L	1	8/13/2013 21:59
O-XYLENE	ND		1	UG/L	1	8/13/2013 21:59
GASOLINE RANGE ORGANICS	ND		100	UG/L	1	8/13/2013 21:59
Surr: DIBROMOFLUOROMETHANE	105		84-118	%REC	1	8/13/2013 21:59
Surr: TOLUENE-D8	102		85-115	%REC	1	8/13/2013 21:59
Surr: 4-BROMOFLUOROBENZENE	103		85-115	%REC	1	8/13/2013 21:59
ION CHROMATOGRAPHY			EPA300.0		Prep Date: 8/9/2013	PrepBy: AJD
BROMIDE	ND		0.2	MG/L	1	8/9/2013 17:19
CHLORIDE	27		2	MG/L	10	8/9/2013 17:33
FLUORIDE	1.6		0.1	MG/L	1	8/9/2013 17:19
NITRATE AS N	0.28		0.2	MG/L	1	8/9/2013 17:19
NITRITE AS N	ND		0.1	MG/L	1	8/9/2013 17:19
SULFATE	200		10	MG/L	10	8/9/2013 17:33
METALS BY 200.8			EPA200.8		Prep Date: 8/12/2013	PrepBy: BAS
BORON	180		50	UG/L	10	8/13/2013 13:55
BARIUM	27		1	UG/L	10	8/13/2013 13:55
CALCIUM	120000		1000	UG/L	10	8/13/2013 13:55
IRON	ND		100	UG/L	10	8/13/2013 13:55
POTASSIUM	5800		1000	UG/L	10	8/13/2013 13:55
MAGNESIUM	47000		100	UG/L	10	8/13/2013 13:55
MANGANESE	100		2	UG/L	10	8/13/2013 13:55
SODIUM	110000		1000	UG/L	10	8/13/2013 13:55

ALS Environmental -- FC

SAMPLE SUMMARY REPORT

Client: Western Water and Land, Inc.
Project: 30000.01.29 GM 11-28 BWQ
Sample ID: GM 11-28-185334
Legal Location:
Collection Date: 8/8/2013 11:00

Date: 22-Aug-13
Work Order: 1308154
Lab ID: 1308154-1
Matrix: WATER
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
SELENIUM	2.5		1	UG/L	10	8/13/2013 13:55
STRONTIUM	1500		1	UG/L	10	8/13/2013 13:55
PH			SM4500-H		Prep Date: 8/13/2013	PrepBy: KLR
PH	7.58		0.1	pH	1	8/13/2013
SPECIFIC CONDUCTANCE IN WATER			SM2510B		Prep Date: 8/13/2013	PrepBy: KLR
SPECIFIC CONDUCTIVITY	1249		1	umhos/cm	1	8/13/2013
TOTAL DISSOLVED SOLIDS			SM2540C		Prep Date: 8/13/2013	PrepBy: KLR
TOTAL DISSOLVED SOLIDS	820		20	MG/L	1	8/14/2013
TOTAL PHOSPHORUS AS P			EPA365.2		Prep Date: 8/15/2013	PrepBy: TWK
TOTAL PHOSPHORUS	ND		0.05	MG/L	1	8/15/2013

Client: Western Water and Land, Inc.
Project: 30000.01.29 GM 11-28 BWQ
Sample ID: GM 11-28-185334
Legal Location:
Collection Date: 8/8/2013 11:00

Date: 22-Aug-13
Work Order: 1308154
Lab ID: 1308154-1
Matrix: WATER
Percent Moisture:

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

Radiochemistry:

- U or ND - Result is less than the sample specific MDC.
- 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.

Organics:

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

Diesel Range Organics:

Client: Western Water and Land, Inc.
Project: 30000.01.29 GM 11-28 BWQ
Sample ID: GM 11-28-185334
Legal Location:
Collection Date: 8/8/2013 11:00

Date: 22-Aug-13
Work Order: 1308154
Lab ID: 1308154-1
Matrix: WATER
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<p>G - A pattern resembling gasoline was detected in this sample. D - A pattern resembling diesel was detected in this sample. M - A pattern resembling motor oil was detected in this sample. C - A pattern resembling crude oil was detected in this sample. 4 - A pattern resembling JP-4 was detected in this sample. 5 - A pattern resembling JP-5 was detected in this sample. H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest. L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest. Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:</p> <ul style="list-style-type: none"> - gasoline - JP-8 - diesel - mineral spirits - motor oil - Stoddard solvent - bunker C 						

ALS Environmental -- FC

Date: 8/22/2013 2:13:

Client: Western Water and Land, Inc.
 Work Order: 1308154
 Project: 30000.01.29 GM 11-28 BWQ

QC BATCH REPORT

Batch ID: **HC130810-9-2** Instrument ID: **MEE-1** Method: **RSK175**

LCS Sample ID: **HC130810-9** Units: **UG/L** Analysis Date: **8/10/2013 21:08**

Client ID: Run ID: **HC130810-9A** Prep Date: **8/10/2013** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
METHANE	123	1	142		86	80-120			25	
ETHANE	227	2	267		85	80-120			25	
PROPANE	321	1	391		82	80-120			25	

LCSD Sample ID: **HC130810-9** Units: **UG/L** Analysis Date: **8/10/2013 22:03**

Client ID: Run ID: **HC130810-9A** Prep Date: **8/10/2013** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
METHANE	139	1	142		98	80-120	123	13	25	
ETHANE	254	2	267		95	80-120	227	11	25	
PROPANE	356	1	391		91	80-120	321	10	25	

MB Sample ID: **HC130810-9** Units: **UG/L** Analysis Date: **8/10/2013 21:12**

Client ID: Run ID: **HC130810-9A** Prep Date: **8/10/2013** DF: **1**

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

The following samples were analyzed in this batch:

Client: Western Water and Land, Inc.
 Work Order: 1308154
 Project: 30000.01.29 GM 11-28 BWQ

QC BATCH REPORT

Batch ID: **EX130813-4-1** Instrument ID: **FUELS-1** Method: **SW8015M**

LCS		Sample ID: EX130813-4			Units: MG/L			Analysis Date: 8/16/2013 02:10			
Client ID:		Run ID: HC130815-33A			Prep Date: 8/13/2013			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual	
Diesel Range Organics	9.83	0.5	10		98	36-150			20		
Surr: O-TERPHENYL	1.26		1.25		100	51-97				*	

LCSD		Sample ID: EX130813-4			Units: MG/L			Analysis Date: 8/16/2013 02:40			
Client ID:		Run ID: HC130815-33A			Prep Date: 8/13/2013			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual	
Diesel Range Organics	10.3	0.5	10		103	36-150	9.83	5	20		
Surr: O-TERPHENYL	1.36		1.25		109	51-97		8		*	

MB		Sample ID: EX130813-4			Units: MG/L			Analysis Date: 8/16/2013 01:39			
Client ID:		Run ID: HC130815-33A			Prep Date: 8/13/2013			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual	
Diesel Range Organics	ND	0.5									
Surr: O-TERPHENYL	1.29		1.25		103	51-97				*	

The following samples were analyzed in this batch:

Client: Western Water and Land, Inc.
 Work Order: 1308154
 Project: 30000.01.29 GM 11-28 BWQ

QC BATCH REPORT

Batch ID: **IP130812-2-5** Instrument ID: **ICPMS2** Method: **EPA200.8**

LCS		Sample ID: FM130809-1			Units: UG/L		Analysis Date: 8/13/2013 13:42			
Client ID:		Run ID: IM130813-10A3			Prep Date: 8/12/2013		DF: 10			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
BARIUM	94.8	1	100		95	85-115			20	
BORON	897	50	1000		90	85-115			20	
CALCIUM	9890	1000	10000		99	85-115			20	
IRON	5080	100	5000		102	85-115			20	
MAGNESIUM	9500	100	10000		95	85-115			20	
MANGANESE	196	2	200		98	85-115			20	
POTASSIUM	5140	1000	5000		103	85-115			20	
SELENIUM	100	1	100		100	85-115			20	
SODIUM	10400	1000	10000		104	85-115			20	
STRONTIUM	99.3	1	100		99	85-115			20	

MB		Sample ID: F130809-1			Units: UG/L		Analysis Date: 8/13/2013 13:38			
Client ID:		Run ID: IM130813-10A3			Prep Date: 8/12/2013		DF: 10			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
BARIUM	ND	1								
BORON	ND	50								
CALCIUM	ND	1000								
IRON	ND	100								
MAGNESIUM	ND	100								
MANGANESE	ND	2								
POTASSIUM	ND	1000								
SELENIUM	ND	1								
SODIUM	ND	1000								
STRONTIUM	ND	1								

The following samples were analyzed in this batch:

Client: Western Water and Land, Inc.
 Work Order: 1308154
 Project: 30000.01.29 GM 11-28 BWQ

QC BATCH REPORT

Batch ID: VL130813-4-1 Instrument ID: HPV1 Method: SW8260_25

LCS		Sample ID: VL130813-4			Units: UG/L		Analysis Date: 8/13/2013 17:47			
Client ID:		Run ID: VL130813-4A			Prep Date: 8/13/2013		DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
BENZENE	9.91	1	10		99	83-117			20	
TOLUENE	9.41	1	10		94	82-113			20	
ETHYLBENZENE	10.1	1	10		101	81-113			20	
M+P-XYLENE	21.5	1	20		108	82-115			20	
O-XYLENE	10.7	1	10		107	81-115			20	
GASOLINE RANGE ORGANICS	452	100	500		90.382	80-120		1	20	
Surr: DIBROMOFLUOROMETHA	26.9		25		108	84-118				
Surr: TOLUENE-D8	25.6		25		103	85-115				
Surr: 4-BROMOFLUOROBENZE	24.7		25		99	85-115				

LCSD		Sample ID: VL130813-4			Units: UG/L		Analysis Date: 8/13/2013 18:10			
Client ID:		Run ID: VL130813-4A			Prep Date: 8/13/2013		DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
BENZENE	9.34	1	10		93	83-117	9.91	6	20	
TOLUENE	8.84	1	10		88	82-113	9.41	6	20	
ETHYLBENZENE	9.43	1	10		94	81-113	10.1	7	20	
M+P-XYLENE	20.1	1	20		100	82-115	21.5	7	20	
O-XYLENE	10.1	1	10		101	81-115	10.7	6	20	
GASOLINE RANGE ORGANICS	446	100	500		89.254	80-120	452	1	20	
Surr: DIBROMOFLUOROMETHA	27.3		25		109	84-118		1		
Surr: TOLUENE-D8	25.5		25		102	85-115		1		
Surr: 4-BROMOFLUOROBENZE	24.6		25		98	85-115		1		

MB		Sample ID: VL130813-4			Units: UG/L		Analysis Date: 8/13/2013 18:56			
Client ID:		Run ID: VL130813-4A			Prep Date: 8/13/2013		DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
BENZENE	ND	1								
TOLUENE	ND	1								
ETHYLBENZENE	ND	1								
M+P-XYLENE	ND	1								
O-XYLENE	ND	1								
GASOLINE RANGE ORGANICS	ND	100								
Surr: DIBROMOFLUOROMETHA	26.5		25		106	84-118				
Surr: TOLUENE-D8	25.8		25		103	85-115				
Surr: 4-BROMOFLUOROBENZE	25.4		25		102	85-115				

The following samples were analyzed in this batch: 1308154-1

Client: Western Water and Land, Inc.
Work Order: 1308154
Project: 30000.01.29 GM 11-28 BWQ

QC BATCH REPORT

Batch ID: **AK130812-2-1** Instrument ID: **NONE** Method: **SM2320B**

LCS		Sample ID: AK130812-2			Units: MG/L			Analysis Date: 8/12/2013		
Client ID:		Run ID: ak130812-2a			Prep Date: 8/12/2013			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL ALKALINITY AS CaCO3	96.7	5	100		97	85-115			15	

MB		Sample ID: AK130812-2			Units: MG/L			Analysis Date: 8/12/2013		
Client ID:		Run ID: ak130812-2a			Prep Date: 8/12/2013			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
BICARBONATE AS CaCO3	ND	5								
CARBONATE AS CaCO3	ND	5								
TOTAL ALKALINITY AS CaCO3	ND	5								

The following samples were analyzed in this batch:

Client: Western Water and Land, Inc.
 Work Order: 1308154
 Project: 30000.01.29 GM 11-28 BWQ

QC BATCH REPORT

Batch ID: **IC130809-1-1** Instrument ID: **IC** Method: **EPA300.0**

LCS		Sample ID: IC130809-1			Units: MG/L		Analysis Date: 8/9/2013 13:48			
Client ID:		Run ID: IC130809-1A1			Prep Date: 8/9/2013		DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
FLUORIDE	1.9	0.1	2		95	90-110			15	
CHLORIDE	4.88	0.2	5		98	90-110			15	
NITRITE AS N	1.81	0.1	2		91	90-110			15	
BROMIDE	5.01	0.2	5		100	90-110			15	
NITRATE AS N	5.08	0.2	5		102	90-110			15	
SULFATE	19.2	1	20		96	90-110			15	

MB		Sample ID: IC130809-1			Units: MG/L		Analysis Date: 8/9/2013 14:02			
Client ID:		Run ID: IC130809-1A1			Prep Date: 8/9/2013		DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
FLUORIDE	ND	0.1								
CHLORIDE	ND	0.2								
NITRITE AS N	ND	0.1								
BROMIDE	ND	0.2								
NITRATE AS N	ND	0.2								
SULFATE	ND	1								

The following samples were analyzed in this batch:

Client: Western Water and Land, Inc.
Work Order: 1308154
Project: 30000.01.29 GM 11-28 BWQ

QC BATCH REPORT

Batch ID: **PH130813-1-1** Instrument ID: **pH-1** Method: **SM4500-H**

DUP Sample ID: **1308154-1** Units: **pH** Analysis Date: **8/13/2013**
Client ID: **GM 11-28-185334** Run ID: **pH130813-1A1** Prep Date: **8/13/2013** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
PH	7.6	0.1					7.58		0.2	

The following samples were analyzed in this batch:

1308154-1

Client: Western Water and Land, Inc.
Work Order: 1308154
Project: 30000.01.29 GM 11-28 BWQ

QC BATCH REPORT

Batch ID: **SC130813-1-1** Instrument ID: **pH-1** Method: **SM2510B**

DUP Sample ID: **1308154-1** Units: **umhos/cm** Analysis Date: **8/13/2013**
Client ID: **GM 11-28-185334** Run ID: **SC130813-1A** Prep Date: **8/13/2013** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
SPECIFIC CONDUCTIVITY	1261	1					1249	1	10	

The following samples were analyzed in this batch:

1308154-1

Client: Western Water and Land, Inc.
Work Order: 1308154
Project: 30000.01.29 GM 11-28 BWQ

QC BATCH REPORT

Batch ID: **TD130813-2-1** Instrument ID: **Balance** Method: **SM2540C**

LCS	Sample ID: TD130813-2			Units: MG/L			Analysis Date: 8/14/2013			
Client ID:	Run ID: TD130814-2A			Prep Date: 8/13/2013			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	416	20	400		104	85-115			5	

MB	Sample ID: TD130813-2			Units: MG/L			Analysis Date: 8/14/2013			
Client ID:	Run ID: TD130814-2A			Prep Date: 8/13/2013			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	ND	20								

The following samples were analyzed in this batch:

Client: Western Water and Land, Inc.
Work Order: 1308154
Project: 30000.01.29 GM 11-28 BWQ

QC BATCH REPORT

Batch ID: **TP130815-1-1** Instrument ID: **Spec** Method: **EPA365.2**

LCS	Sample ID: TP130815-1					Units: MG/L	Analysis Date: 8/15/2013				
Client ID:		Run ID: TP130815-1A					Prep Date: 8/15/2013			DF: 1	
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual	
TOTAL PHOSPHORUS	0.572	0.05	0.5		114	80-120			20		

MB	Sample ID: TP130815-1					Units: MG/L	Analysis Date: 8/15/2013				
Client ID:		Run ID: TP130815-1A					Prep Date: 8/15/2013			DF: 1	
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD	RPD Limit	Qual	
TOTAL PHOSPHORUS	ND	0.05									

The following samples were analyzed in this batch: