Friday, March 02, 2018

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

Re: ALS Workorder: 1802269
Project Name: TEP 317B: RU32-12 Pad (drilling ops)
Project Number:

Dear Mr. Smith:

One surface water sample was received from Western Water and Land, Inc., on 2/15/2018. The sample was scheduled for the following analyses:

GC/MS Semivolatiles
GC/MS Volatiles
Inorganics
Metals
Total Extractable Petroleum Hydrocarbons (Diesel)

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

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

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

Sincerely,

ALS Environmental
Katie M. OBrien
Project Manager

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

ALS Environmental – Fort Collins	
Accreditation Body	License or Certification Number
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Louisiana (LA)	05057
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280

ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 1802269
Client Name: Western Water and Land, Inc.
Client Project Name: TEP 317B: RU32-12 Pad (drilling ops)
Client Project Number:
Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
BC 10	1802269-1		SurfaceW	14-Feb-18	13:00

ALS Laboratory Group

~~3352 128th Ave, Holland, MI 49424~~ Fort Collins, CO
~~PH: (616) 399-6070~~

Chain-of-Custody

Form 202r8

WORKORDER # 1802269

PAGE 1 of 1

DISPOSAL: By Lab or Return to Client

PROJECT NAME	TEP 3,7B RU32-12 Pad (drilling ops)	SAMPLER	Shelby
FACILITY NAME		PROJECT NO.	
FACILITY ID (API)		EDD FORMAT	
COMPANY NAME	Western Water & Land, Inc.	PURCHASE ORDER	
SEND REPORT TO	Bruce Smith	BILL TO COMPANY	TEP Rocky Mtn LLC
ADDRESS	743 Horizon Ct, Ste 330	INVOICE ATTN TO	Tammy Gose
CITY / STATE / ZIP	Grand Junction, CO 81506	ADDRESS	1058 CR 215
PHONE	(970) 242-0170	CITY / STATE / ZIP	Parachute, CO 81635
FAX		PHONE	(970) 712-6049
E-MAIL	bsmith@westernwaterandland.com	FAX	
		E-MAIL	tgose@terraep.com

DATE: 2-14-18

TURNAROUND: Standard

Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Bottles	Pres.	QC	NG1	BART	BTEX / GRO	GRO	DRO	Dissolved Metals, lab filtered	Anions, Alk, TDS, pH, SpC, nitrates	Total Phosphorus	Dissolved gases - HCl preserved	Dissolved gases - unpreserved	PAH's
(1)	BC 10	SW	2-14-18	1300	9	1	IV			3		3	1	1				1

Field Parameters

BC 10	Temp (°C)	0.27	DO (%)	85.7	SpC (uS/cm)	372	Turb (NTUs)	1.34			
	pH (s.u.)	2.12 (?)	DO (mg/L)	12.37	ORP (mv)	495.5	Disch (gpm)	NM			
	Temp (°C)		DO (%)		SpC (uS/cm)		Turb (NTUs)				
	pH (s.u.)		DO (mg/L)		ORP (mv)		Disch (gpm)				

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

For metals or anions, please detail analytes below.

Comments:

PM: Katie O'brien

diss metals Rule WQ list plus arsenic & chromium

QC PACKAGE (check below)	
	LEVEL II (Standard QC)
	LEVEL III (Std QC + forms)
x	LEVEL IV (Std QC + forms + raw data)

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

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY		Shelby Goodwin	2-14-18	1410
RECEIVED BY			2-14-18	1410
RELINQUISHED BY			2-14-18	1830
RECEIVED BY	C Trimble	C Trimble	2-15-18	1010
RELINQUISHED BY				
RECEIVED BY				

ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: Western Water Workorder No: 1802269

Project Manager: Kim Initials: CDT Date: 2-16-18

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

Cooler #:	1							
Temperature (°C):	4.5							
No. of custody seals on cooler:	1							
DOT Survey/ Acceptance Information — External µR/hr reading:	10							
Background µR/hr reading:	10							

Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? (YES) / NO / NA (If no, see Form 008.)

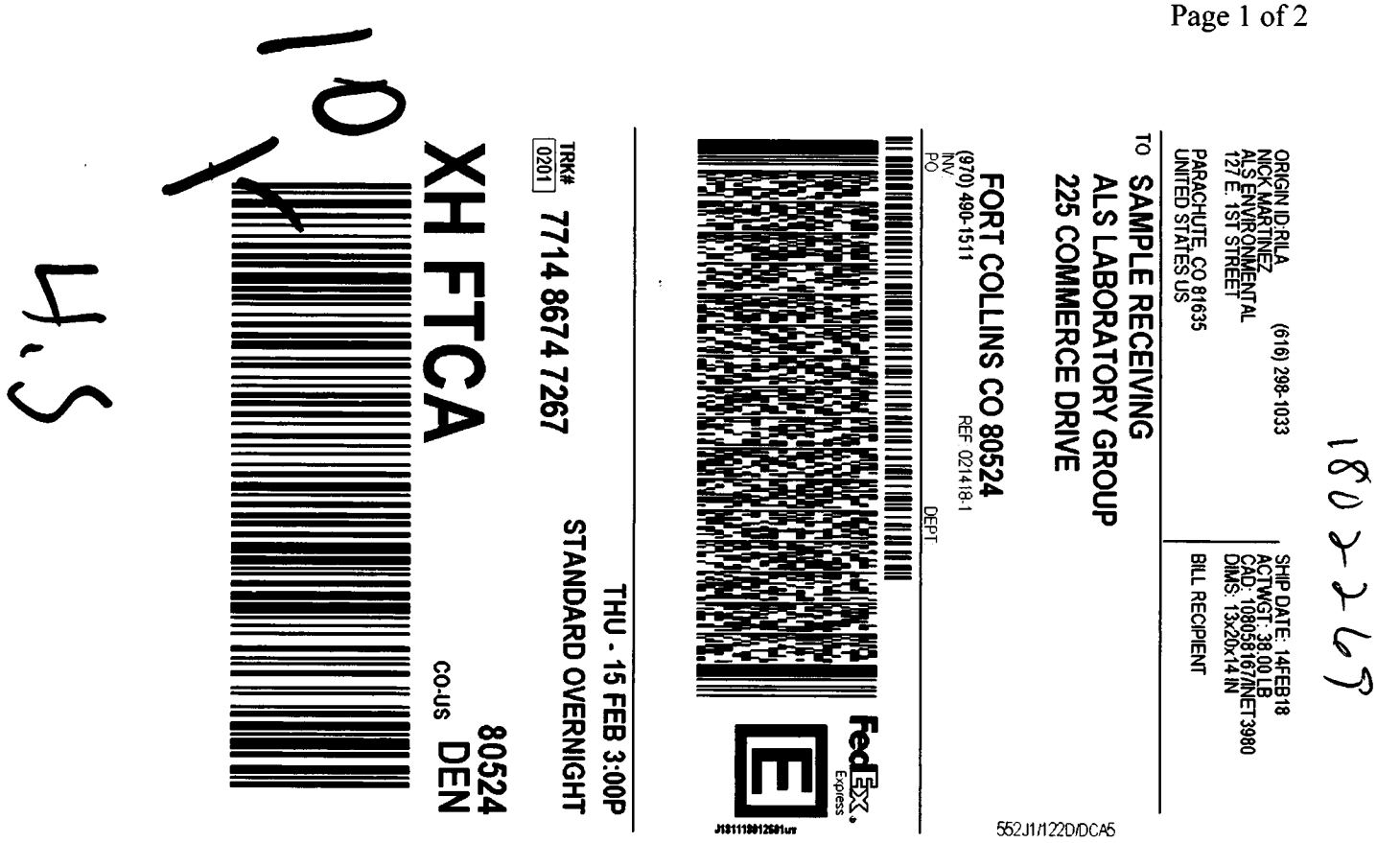
Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

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

Project Manager Signature / Date: 2/16/18

Form 201r25.xls
(02/12/2018)

*IR Gun #1, VWR SN 170560549
*IR Gun #3, VWR SN 170647571
*IR Gun #4, Oakton, SN 2372220101-0002



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

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

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

1802269

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

All acceptance criteria were met.

GC/MS Semivolatiles:
The sample was analyzed using GC/MS following the current revision of SOP 506 based on SW-846 Method 8270D.

All acceptance criteria were met.

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

All acceptance criteria were met.

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

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

All acceptance criteria were met.

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

Analyte	Method	SOP #
Alkalinity	SM2320B	1106
Bicarbonate	SM2320B	1106

Carbonate	SM2320B	1106
pH	SM4500-H^+ B	1126
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
Total nitrates	300.0 Revision 2.1	1113
Sulfate	300.0 Revision 2.1	1113

A matrix spike (MS) and matrix spike duplicate (MSD) were prepared and analyzed with the anion batch. All guidance criteria for precision and accuracy were met with the following exceptions:

Analyte	Sample ID
Nitrite as N	1802269-1MS & MSD

The native sample result is flagged for nitrite as N. The laboratory control sample indicates that the procedure was in control.

All remaining acceptance criteria were met.

Client: Western Water and Land, Inc. **Date:** *28-Feb-18*
Project: TEP 317B: RU32-12 Pad (drilling ops) **Work Order:** 1802269
Sample ID: BC 10 **Lab ID:** 1802269-1
Legal Location: **Matrix:** SURFACEWAT
Collection Date: 2/14/2018 13:00 **Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	MDL	Date Analyzed
ALKALINITY AS CALCIUM CARBONATE			**SM2320B**		Prep Date: **2/17/2018**		PrepBy: **HMA**
BICARBONATE AS CaCO3	**170**		**20**	**MG/L**	1		2/17/2018
CARBONATE AS CaCO3	ND		20	MG/L	1		2/17/2018
TOTAL ALKALINITY AS CaCO3	**170**		**20**	**MG/L**	1		2/17/2018
DIESEL RANGE ORGANICS			**SW8015M**		Prep Date: **2/19/2018**		PrepBy: **JFN**
Diesel Range Organics	ND		0.58	MG/L	1	0.16	2/19/2018 20:46
Surr: O-TERPHENYL	*94*		*63-126*	*%REC*	1		2/19/2018 20:46
GC/MS SEMI-VOLATILES			**SW8270**		Prep Date: **2/16/2018**		PrepBy: **LML**
NAPHTHALENE	ND		9.4	UG/L	1	2.8	2/22/2018 17:43
2-METHYLNAPHTHALENE	ND		9.4	UG/L	1	2.8	2/22/2018 17:43
ACENAPHTHYLENE	ND		9.4	UG/L	1	2.8	2/22/2018 17:43
ACENAPHTHENE	ND		9.4	UG/L	1	2.8	2/22/2018 17:43
FLUORENE	ND		9.4	UG/L	1	2.8	2/22/2018 17:43
PHENANTHRENE	ND		9.4	UG/L	1	2.8	2/22/2018 17:43
ANTHRACENE	ND		9.4	UG/L	1	2.8	2/22/2018 17:43
FLUORANTHENE	ND		9.4	UG/L	1	2.8	2/22/2018 17:43
PYRENE	ND		9.4	UG/L	1	2.8	2/22/2018 17:43
BENZO(A)ANTHRACENE	ND		9.4	UG/L	1	2.8	2/22/2018 17:43
CHRYSENE	ND		9.4	UG/L	1	2.8	2/22/2018 17:43
BENZO(B)FLUORANTHENE	ND		9.4	UG/L	1	2.8	2/22/2018 17:43
BENZO(K)FLUORANTHENE	ND		9.4	UG/L	1	2.8	2/22/2018 17:43
BENZO(A)PYRENE	ND		9.4	UG/L	1	2.8	2/22/2018 17:43
INDENO(1,2,3-CD)PYRENE	ND		9.4	UG/L	1	2.8	2/22/2018 17:43
DIBENZO(A,H)ANTHRACENE	ND		9.4	UG/L	1	2.8	2/22/2018 17:43
BENZO(G,H,I)PERYLENE	ND		9.4	UG/L	1	2.8	2/22/2018 17:43
Surr: NITROBENZENE-D5	*58*		*53-111*	*%REC*	1		2/22/2018 17:43
Surr: 2-FLUOROBIPHENYL	*79*		*55-108*	*%REC*	1		2/22/2018 17:43
Surr: TERPHENYL-D14	*57*		*34-139*	*%REC*	1		2/22/2018 17:43
GC/MS VOLATILES			**SW8260_25**		Prep Date: **2/27/2018**		PrepBy: **JXK**
BENZENE	ND		1	UG/L	1	0.32	2/27/2018 15:54
TOLUENE	ND		1	UG/L	1	0.31	2/27/2018 15:54
ETHYLBENZENE	ND		1	UG/L	1	0.31	2/27/2018 15:54
M+P-XYLENE	ND		1	UG/L	1	0.31	2/27/2018 15:54
O-XYLENE	ND		1	UG/L	1	0.31	2/27/2018 15:54
TOTAL XYLENES	ND		1	UG/L	1		2/27/2018 15:54
Surr: 4-BROMOFLUOROBENZENE	*103*		*85-115*	*%REC*	1		2/27/2018 15:54
Surr: DIBROMOFLUOROMETHANE	*103*		*84-118*	*%REC*	1		2/27/2018 15:54
Surr: TOLUENE-D8	*97*		*85-115*	*%REC*	1		2/27/2018 15:54
GASOLINE RANGE ORGANICS	ND		100	UG/L	1	47	2/27/2018 15:54
ION CHROMATOGRAPHY			**EPA300.0**		Prep Date: **2/16/2018**		PrepBy: **HMA**
BROMIDE	ND		0.2	MG/L	1	0.06	2/16/2018 11:41
CHLORIDE	**1.2**		**0.2**	**MG/L**	1	0.06	2/16/2018 11:41

Client: Western Water and Land, Inc. **Date:** *28-Feb-18*

Project: TEP 317B: RU32-12 Pad (drilling ops) **Work Order:** 1802269

Sample ID: BC 10 **Lab ID:** 1802269-1

Legal Location: **Matrix:** SURFACEWAT

Collection Date: 2/14/2018 13:00 **Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	MDL	Date Analyzed
FLUORIDE	**0.13**		**0.1**	**MG/L**	1	0.03	2/16/2018 11:41
NITRATE/NITRITE AS N	**0.26**		**0.1**	**MG/L**	1		2/16/2018 11:41
NITRATE AS N	**0.26**		**0.2**	**MG/L**	1	0.06	2/16/2018 11:41
NITRITE AS N	ND	N	0.1	MG/L	1	0.03	2/16/2018 11:41
SULFATE	**19**		**1**	**MG/L**	1	0.15	2/16/2018 11:41
METALS BY 200.8			**EPA200.8**		Prep Date: **2/22/2018**		PrepBy: **JML**
BARIUM	**0.053**		**0.001**	**MG/L**	10	0.00039	2/26/2018 09:55
BORON	**0.02**	J	**0.05**	**MG/L**	10	0.0049	2/26/2018 09:55
CALCIUM	**46**		**1**	**MG/L**	10	0.088	2/26/2018 09:55
IRON	ND		0.1	MG/L	10	0.0094	2/26/2018 09:55
MAGNESIUM	**11**		**0.1**	**MG/L**	10	0.014	2/26/2018 09:55
MANGANESE	**0.0015**	J	**0.002**	**MG/L**	10	0.00031	2/26/2018 09:55
POTASSIUM	**0.97**	J	**1**	**MG/L**	10	0.069	2/26/2018 09:55
SELENIUM	ND		0.001	MG/L	10	0.00022	2/26/2018 09:55
SODIUM	**15**		**1**	**MG/L**	10	0.078	2/26/2018 09:55
STRONTIUM	**0.31**		**0.001**	**MG/L**	10	0.00018	2/26/2018 09:55
ARSENIC	**2.3**		**2**	**UG/L**	10	0.19	2/26/2018 09:55
CHROMIUM	ND		10	UG/L	10	0.92	2/26/2018 09:55
PH			**SM4500-H**		Prep Date: **2/16/2018**		PrepBy: **HMA**
PH	**8.23**		**0.1**	**pH**	1		2/16/2018
SPECIFIC CONDUCTANCE IN WATER			**SM2510B**		Prep Date: **2/16/2018**		PrepBy: **HMA**
SPECIFIC CONDUCTIVITY	**374**		**1**	**umhos/cm**	1		2/16/2018
TOTAL DISSOLVED SOLIDS			**SM2540C**		Prep Date: **2/19/2018**		PrepBy: **HMA**
TOTAL DISSOLVED SOLIDS	**190**		**20**	**MG/L**	1		2/20/2018

Client:	Western Water and Land, Inc.	**Date:**	*28-Feb-18*
Project:	TEP 317B: RU32-12 Pad (drilling ops)	**Work Order:**	1802269
Sample ID:	BC 10	**Lab ID:**	1802269-1
Legal Location:		**Matrix:**	SURFACEWAT
Collection Date:	2/14/2018 13:00	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	MDL	Date Analyzed

Explanation of Qualifiers

Radiochemistry:

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

Inorganics:

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

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.
B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.
E - Analyte concentration exceeds the upper level of the calibration range.
J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).
A - A tentatively identified compound is a suspected aldol-condensation product.
X - The analyte was diluted below an accurate quantitation level.
* - The spike recovery is equal to or outside the control criteria used.
+ - The relative percent difference (RPD) equals or exceeds the control criteria.
G - A pattern resembling gasoline was detected in this sample.
D - A pattern resembling diesel was detected in this sample.
M - A pattern resembling motor oil was detected in this sample.
C - A pattern resembling crude oil was detected in this sample.
4 - A pattern resembling JP-4 was detected in this sample.
5 - A pattern resembling JP-5 was detected in this sample.
H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.
L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.
Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
- gasoline
- JP-8
- diesel
- mineral spirits
- motor oil
- Stoddard solvent
- bunker C

Batch ID: **HC180219-81-1** Instrument ID **FUELS-1** Method: **SW8015M**

LCS Sample ID: **HC180219-81** Units: **MG/L** Analysis Date: **2/19/2018 22:33**

Client ID: Run ID: **HC180219-8A** Prep Date: **2/19/2018** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Diesel Range Organics	8.68	0.578	8.02		108	36-150				20	
Surr: O-TERPHENYL	1.52		1.6		95	63-126					

MB Sample ID: **HC180219-81** Units: **MG/L** Analysis Date: **2/19/2018 19:41**

Client ID: Run ID: **HC180219-8A** Prep Date: **2/19/2018** DF: **1**

Analyte	Result	ReportLimit	MDL	%REC	Control Limit	Qual
Diesel Range Organics	ND	0.59	0.16			
Surr: O-TERPHENYL	1.48			91	63-126	

The following samples were analyzed in this batch: 1802269-1

Client: Western Water and Land, Inc.
Work Order: 1802269
Project: TEP 317B: RU32-12 Pad (drilling ops)

QC BATCH REPORT

Batch ID: **IP180222-1-2** Instrument ID **ICPMS2** Method: **EPA200.8**

LCS Sample ID: **IM180222-1** Units: **MG/L** Analysis Date: **2/26/2018 09:49**
Client ID: Run ID: **IM180226-10A4** Prep Date: **2/22/2018** DF: **10**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
ARSENIC	0.0989	0.002	0.1		99	85-115				20	
CHROMIUM	0.499	0.01	0.5		100	85-115				20	
BARIUM	0.0924	0.001	0.1		92	85-115				20	
BORON	0.939	0.05	1		94	85-115				20	
CALCIUM	9.35	1	10		94	85-115				20	
IRON	4.9	0.1	5		98	85-115				20	
MAGNESIUM	9.91	0.1	10		99	85-115				20	
MANGANESE	0.101	0.002	0.1		101	85-115				20	
POTASSIUM	4.89	1	5		98	85-115				20	
SELENIUM	0.0923	0.001	0.1		92	85-115				20	
SODIUM	9.86	1	10		99	85-115				20	
STRONTIUM	0.0962	0.001	0.1		96	85-115				20	

MB Sample ID: **FP180220-1** Units: **MG/L** Analysis Date: **2/26/2018 09:43**
Client ID: Run ID: **IM180226-10A4** Prep Date: **2/22/2018** DF: **10**

Analyte	Result	ReportLimit	MDL	Qual
ARSENIC	ND	0.002	0.00019	
CHROMIUM	ND	0.01	0.00092	
BARIUM	0.0018	0.001	0.00039	
BORON	0.0062	0.05	0.0048	J
CALCIUM	ND	1	0.088	
IRON	ND	0.1	0.0094	
MAGNESIUM	ND	0.1	0.014	
MANGANESE	ND	0.002	0.00031	
POTASSIUM	ND	1	0.069	
SELENIUM	-0.00029	0.001	0.00022	J
SODIUM	ND	1	0.078	
STRONTIUM	ND	0.001	0.00018	

The following samples were analyzed in this batch: 1802269-1

QC BATCH REPORT

Batch ID: **EX180216-1-1** Instrument ID **HPSV2** Method: **SW8270**

LCS Sample ID: **EX180216-1** Units: **UG/L** Analysis Date: **2/22/2018 16:34**

Client ID: Run ID: **SV180222-22** Prep Date: **2/16/2018** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
NAPHTHALENE	41.9	10	60		70	60-100				20	
2-METHYLNAPHTHALENE	39.9	10	60		66	62-100				20	
ACENAPHTHYLENE	48.1	10	60		80	67-108				20	
ACENAPHTHENE	43.8	10	60		73	60-108				20	
FLUORENE	45.9	10	60		77	64-116				20	
PHENANTHRENE	44	10	60		73	64-113				20	
ANTHRACENE	43.6	10	60		73	72-108				20	
FLUORANTHENE	45.9	10	60		76	63-122				20	
PYRENE	54.1	10	60		90	60-113				20	
BENZO(A)ANTHRACENE	48	10	60		80	69-107				20	
CHRYSENE	55.5	10	60		93	68-114				20	
BENZO(B)FLUORANTHENE	50.1	10	60		83	67-111				20	
BENZO(K)FLUORANTHENE	48.8	10	60		81	65-118				20	
BENZO(A)PYRENE	48.7	10	60		81	62-104				20	
INDENO(1,2,3-CD)PYRENE	46.1	10	60		77	54-124				20	
DIBENZO(A,H)ANTHRACENE	46.6	10	60		78	57-126				20	
BENZO(G,H,I)PERYLENE	45.8	10	60		76	52-124				20	
Surr: NITROBENZENE-D5	27.8		50		56	53-111					
Surr: 2-FLUOROBIPHENYL	37.6		50		75	55-108					
Surr: TERPHENYL-D14	44.6		50		89	34-139					

QC BATCH REPORT

Batch ID: **EX180216-1-1** Instrument ID **HPSV2** Method: **SW8270**

LCSD Sample ID: **EX180216-1** Units: **UG/L** Analysis Date: **2/22/2018 17:19**

Client ID: Run ID: **SV180222-22** Prep Date: **2/16/2018** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
NAPHTHALENE	44.6	10	60		74	60-100		41.9	6	20	
2-METHYLNAPHTHALENE	41.3	10	60		69	62-100		39.9	4	20	
ACENAPHTHYLENE	50.3	10	60		84	67-108		48.1	4	20	
ACENAPHTHENE	46.8	10	60		78	60-108		43.8	7	20	
FLUORENE	48.6	10	60		81	64-116		45.9	6	20	
PHENANTHRENE	48	10	60		80	64-113		44	9	20	
ANTHRACENE	45.2	10	60		75	72-108		43.6	4	20	
FLUORANTHENE	48.2	10	60		80	63-122		45.9	5	20	
PYRENE	55.3	10	60		92	60-113		54.1	2	20	
BENZO(A)ANTHRACENE	49.5	10	60		82	69-107		48	3	20	
CHRYSENE	57.4	10	60		96	68-114		55.5	3	20	
BENZO(B)FLUORANTHENE	50.6	10	60		84	67-111		50.1	1	20	
BENZO(K)FLUORANTHENE	49.4	10	60		82	65-118		48.8	1	20	
BENZO(A)PYRENE	49.7	10	60		83	62-104		48.7	2	20	
INDENO(1,2,3-CD)PYRENE	47.2	10	60		79	54-124		46.1	2	20	
DIBENZO(A,H)ANTHRACENE	46.3	10	60		77	57-126		46.6	1	20	
BENZO(G,H,I)PERYLENE	46.8	10	60		78	52-124		45.8	2	20	
Surr: NITROBENZENE-D5	30.4		50		61	53-111			9		
Surr: 2-FLUOROBIPHENYL	40.5		50		81	55-108			7		
Surr: TERPHENYL-D14	45.1		50		90	34-139			1		

QC BATCH REPORT

Batch ID: **EX180216-1-1** Instrument ID **HPSV2** Method: **SW8270**

MB Sample ID: **EX180216-1** Units: **UG/L** Analysis Date: **2/22/2018 16:12**

Client ID: Run ID: **SV180222-22** Prep Date: **2/16/2018** DF: **1**

Analyte	Result	ReportLimit	MDL			Qual
NAPHTHALENE	ND	10	3			
2-METHYLNAPHTHALENE	ND	10	3			
ACENAPHTHYLENE	ND	10	3			
ACENAPHTHENE	ND	10	3			
FLUORENE	ND	10	3			
PHENANTHRENE	ND	10	3			
ANTHRACENE	ND	10	3			
FLUORANTHENE	ND	10	3			
PYRENE	ND	10	3			
BENZO(A)ANTHRACENE	ND	10	3			
CHRYSENE	ND	10	3			
BENZO(B)FLUORANTHENE	ND	10	3			
BENZO(K)FLUORANTHENE	ND	10	3			
BENZO(A)PYRENE	ND	10	3			
INDENO(1,2,3-CD)PYRENE	ND	10	3			
DIBENZO(A,H)ANTHRACENE	ND	10	3			
BENZO(G,H,I)PERYLENE	ND	10	3			
Surr: NITROBENZENE-D5	27.8			56	53-111	
Surr: 2-FLUOROBIPHENYL	36.7			73	55-108	
Surr: TERPHENYL-D14	41.5			83	34-139	

The following samples were analyzed in this batch: 1802269-1

Client: Western Water and Land, Inc.
Work Order: 1802269
Project: TEP 317B: RU32-12 Pad (drilling ops)

QC BATCH REPORT

Batch ID: **VL180227-4-1** Instrument ID **HPV4** Method: **SW8260_25**

LCS Sample ID: **VL180227-4** Units: **%REC** Analysis Date: **2/27/2018 09:48**
Client ID: Run ID: **VL180227-4A** Prep Date: **2/27/2018** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	26.6		25		106	85-115					
Surr: DIBROMOFLUOROMETHANE	26.1		25		105	84-118					
Surr: TOLUENE-D8	24.2		25		97	85-115					
BENZENE	9.03	1	10		90	83-117				20	
TOLUENE	8.71	1	10		87	82-113				20	
ETHYLBENZENE	8.48	1	10		85	81-113				20	
M+P-XYLENE	17	1	20		85	82-115				20	
O-XYLENE	8.4	1	10		84	81-115				20	

LCSD Sample ID: **VL180227-4** Units: **%REC** Analysis Date: **2/27/2018 10:12**
Client ID: Run ID: **VL180227-4A** Prep Date: **2/27/2018** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	26.5		25		106	85-115			0		
Surr: DIBROMOFLUOROMETHANE	26.7		25		107	84-118			2		
Surr: TOLUENE-D8	24.4		25		98	85-115			1		
BENZENE	8.88	1	10		89	83-117		9.03	2	20	
TOLUENE	8.46	1	10		85	82-113		8.71	3	20	
ETHYLBENZENE	8.3	1	10		83	81-113		8.48	2	20	
M+P-XYLENE	16.5	1	20		83	82-115		17	3	20	
O-XYLENE	8.01	1	10		80	81-115		8.4	5	20	*

MB Sample ID: **VL180227-4** Units: **%REC** Analysis Date: **2/27/2018 12:11**
Client ID: Run ID: **VL180227-4A** Prep Date: **2/27/2018** DF: **1**

Analyte	Result	ReportLimit	MDL	Qual
Surr: 4-BROMOFLUOROBENZENE	26.2		105 85-115	
Surr: DIBROMOFLUOROMETHANE	25.5		102 84-118	
Surr: TOLUENE-D8	24		96 85-115	
BENZENE	ND	1	0.32	
TOLUENE	ND	1	0.31	
ETHYLBENZENE	ND	1	0.31	
M+P-XYLENE	ND	1	0.31	
O-XYLENE	ND	1	0.31	
TOTAL XYLENES	ND	1		

The following samples were analyzed in this batch: 1802269-1

Client: Western Water and Land, Inc.
Work Order: 1802269
Project: TEP 317B: RU32-12 Pad (drilling ops)

QC BATCH REPORT

Batch ID: **VL180227-4-2** Instrument ID **HPV4** Method: **SW8260_25**

LCS Sample ID: **VL180227-8** Units: **UG/L** Analysis Date: **2/27/2018 10:59**
Client ID: Run ID: **VL180227-4A** Prep Date: **2/27/2018** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	986	100	1000		99	80-120				20	

LCSD Sample ID: **VL180227-8** Units: **UG/L** Analysis Date: **2/27/2018 11:23**
Client ID: Run ID: **VL180227-4A** Prep Date: **2/27/2018** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	959	100	1000		96	80-120		986	3	20	

MB Sample ID: **VL180227-4** Units: **UG/L** Analysis Date: **2/27/2018 12:11**
Client ID: Run ID: **VL180227-4A** Prep Date: **2/27/2018** DF: **1**

Analyte	Result	ReportLimit	MDL	Qual
GASOLINE RANGE ORGANICS	ND	100	47	

The following samples were analyzed in this batch: 1802269-1

Client: Western Water and Land, Inc.
Work Order: 1802269
Project: TEP 317B: RU32-12 Pad (drilling ops)

QC BATCH REPORT

Batch ID: **AK180217-2-6** Instrument ID **NONE** Method: **SM2320B**

LCS Sample ID: **AK180217-2** Units: **MG/L** Analysis Date: **2/17/2018**
Client ID: Run ID: **AK180217-1A1** Prep Date: **2/17/2018** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL ALKALINITY AS CaCO3	99.6	5	100		99	85-115				15	

MB Sample ID: **AK180217-2** Units: **MG/L** Analysis Date: **2/17/2018**
Client ID: Run ID: **AK180217-1A1** Prep Date: **2/17/2018** DF: **1**

Analyte	Result	ReportLimit	MDL	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: 1802269-1

Client: Western Water and Land, Inc.
Work Order: 1802269
Project: TEP 317B: RU32-12 Pad (drilling ops)

QC BATCH REPORT

Batch ID: **IC180216-3-1** Instrument ID **IC3** Method: **EPA300.0**

LCS Sample ID: **IC180216-3** Units: **MG/L** Analysis Date: **2/16/2018 12:25**
Client ID: Run ID: **IC180216-1A4** Prep Date: **2/16/2018** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
BROMIDE	9.6	0.2	10		96	90-110				15	
CHLORIDE	9.79	0.2	10		98	90-110				15	
FLUORIDE	4.9	0.1	5		98	90-110				15	
NITRATE AS N	9.79	0.2	10		98	90-110				15	
NITRITE AS N	5.21	0.1	5		104	90-110				15	
SULFATE	49.1	1	50		98	90-110				15	

MB Sample ID: **IC180216-3** Units: **MG/L** Analysis Date: **2/16/2018 12:40**
Client ID: Run ID: **IC180216-1A4** Prep Date: **2/16/2018** DF: **1**

Analyte	Result	ReportLimit	MDL	Qual
BROMIDE	ND	0.2	0.06	
CHLORIDE	ND	0.2	0.06	
FLUORIDE	ND	0.1	0.03	
NITRATE AS N	ND	0.2	0.06	
NITRITE AS N	ND	0.1	0.03	
SULFATE	0.17	1	0.15	J

MS Sample ID: **1802269-1** Units: **MG/L** Analysis Date: **2/16/2018 11:55**
Client ID: **BC 10** Run ID: **IC180216-1A4** Prep Date: **2/16/2018** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
BROMIDE	4.65	0.2	5	0.2	93	85-115				15	
CHLORIDE	6.47	0.2	5	1.2	106	85-115				15	
FLUORIDE	2.02	0.1	2	0.13	95	85-115				15	
NITRATE AS N	5.39	0.2	5	0.26	103	85-115				15	
NITRITE AS N	2.53	0.1	2	0.1	126	85-115				15	N
SULFATE	40	1	20	19	103	85-115				15	

MSD Sample ID: **1802269-1** Units: **MG/L** Analysis Date: **2/16/2018 12:10**
Client ID: **BC 10** Run ID: **IC180216-1A4** Prep Date: **2/16/2018** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
BROMIDE	4.65	0.2	5	0.2	93	85-115		4.65	0	15	
CHLORIDE	6.44	0.2	5	1.2	105	85-115		6.47	0	15	
FLUORIDE	2.01	0.1	2	0.13	94	85-115		2.02	1	15	
NITRATE AS N	5.36	0.2	5	0.26	102	85-115		5.39	1	15	
NITRITE AS N	2.54	0.1	2	0.1	127	85-115		2.53	0	15	N
SULFATE	39.9	1	20	19	103	85-115		40	0	15	

QC BATCH REPORT

Batch ID: **IC180216-3-1** Instrument ID **IC3** Method: **EPA300.0**

The following samples were analyzed in this batch: 1802269-1

QC BATCH REPORT

Batch ID: **PH180216-1-5** Instrument ID **pH-1** Method: **SM4500-H**

CCV Sample ID: **CCV** Units: **pH** Analysis Date: **2/16/2018**

Client ID: Run ID: **PH180216-1A1** Prep Date: **2/16/2018** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
PH	7.01	0.1	7			6.9-7.1					

ICV Sample ID: **ICV** Units: **pH** Analysis Date: **2/16/2018**

Client ID: Run ID: **PH180216-1A1** Prep Date: **2/16/2018** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
PH	6.98	0.1	7			6.95-7.05					

The following samples were analyzed in this batch: 1802269-1

Client: Western Water and Land, Inc.
Work Order: 1802269
Project: TEP 317B: RU32-12 Pad (drilling ops)

QC BATCH REPORT

Batch ID: **SC180216-1-3** Instrument ID **pH-2** Method: **SM2510B**

CCV Sample ID: **CCV** Units: **umhos/cm** Analysis Date: **2/16/2018**
Client ID: Run ID: **SC180216-1A1** Prep Date: **2/16/2018** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
SPECIFIC CONDUCTIVITY	1420	1	1410		101	271.7-1554					

ICV Sample ID: **ICV** Units: **umhos/cm** Analysis Date: **2/16/2018**
Client ID: Run ID: **SC180216-1A1** Prep Date: **2/16/2018** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
SPECIFIC CONDUCTIVITY	718	1	718		100	646.2-789.7					

The following samples were analyzed in this batch: 1802269-1

Client: Western Water and Land, Inc.
Work Order: 1802269
Project: TEP 317B: RU32-12 Pad (drilling ops)

QC BATCH REPORT

Batch ID: **TD180219-1-1** Instrument ID **Balance** Method: **SM2540C**

DUP Sample ID: **1802269-1** Units: **MG/L** Analysis Date: **2/20/2018**
Client ID: **BC 10** Run ID: **TD180220-1A1** Prep Date: **2/19/2018** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	186	20						190	4	5	

LCS Sample ID: **TD180219-1** Units: **MG/L** Analysis Date: **2/20/2018**
Client ID: Run ID: **TD180220-1A1** Prep Date: **2/19/2018** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	406	20	400		102	85-115				5	

MB Sample ID: **TD180219-1** Units: **MG/L** Analysis Date: **2/20/2018**
Client ID: Run ID: **TD180220-1A1** Prep Date: **2/19/2018** DF: **1**

Analyte	Result	ReportLimit	MDL	Qual
TOTAL DISSOLVED SOLIDS	ND	20		

The following samples were analyzed in this batch: 1802269-1